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USER'S MANUAL

Fiber Modem

MUXpro 700

Version: 1.2
Date: 2006/7/4
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About This Manual

This section guides you on how to use the manual effectively. The manual contains information needed to install, configure, and operate TAINET's MUXpro 700 termination units. The summary of this manual is as follows:

Chapter 1: Overview

Describes SCORPIO 1000 and how to use MUXpro 700 in several applications.

Chapter 2: Specifications

Describes the features, specifications and applications of MUXpro 700.

Chapter 3: Interfacing

Introduces all the interfaces, including front panel and rear panel.

Chapter 4: Installation

Step-by-step guide to assist user install and verify MUXpro 700.

Chapter 5: Operation Of CID

Gives a description of the CID (Craft Interface Device).

Appendix A: Order Information

Describes all the MUXpro 700 series products.

Appendix B: Menu Tree

Describes the LCD and VT-100 menu tree.

Appendix C: Pin Assignment

Describes all cables and connectors with pin definition.

Appendix D: Trouble Shooting

Provides brief trouble shooting list.

Appendix E: Trouble Report

Trouble Report Form

Appendix F: Glossary

Symbols Used in This Manual

3 types of symbols are used throughout this manual. These symbols are used to advise the users when a special condition arises, such as a safety or operational hazard, or to present extra information to the users. These symbols are explained below:

Warning:

This symbol and associated text are used when death or injury to the user may result if operating instructions are not followed properly.

Caution:

This symbol and associated text are used when damages to the equipment or impact to the operation may result if operating instructions are not followed properly.

Note:

This symbol and associated text are used to provide the users with extra information that may be helpful when following the main instructions in this manual.

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Chapter 1. Overview

This chapter begins with a general description of TAINET's MUXpro 700 and how to use the MUXpro 700 in several applications and show the possible interface configurations of MUXpro 700 System. The MUXpro 700 can connect to Scorpio 1000(S1000), S1000 is a high-density universal rack mounted system, which had various interface modules can be used as a concentrator in central office.

1.1 Product Overview

The MUXpro 700 fiber modem provides the signal converting /multiplex /de-multiplex functions. The DTE interface of MUXpro 700 can be configured as "**4*Ethernet + 4*E1/T1**" or "**4*Ethernet + 3*E1 + 1*DATA**". The Ethernet interfaces of MUXpro 700 can be used as a hub liked device (it can not act as a LAN switch). The line interface of MUXpro 700 supports 2 Optical Fiber interfaces. One for normal use, and the other for back up (redundancy) purpose. The fiber transmission rate of MUXpro 700 will be 125Mbps, it can convey the traffics of E1/T1, DATA and 10/100baseTx traffic simultaneously over the single pair of fiber to meet the newly IP base application.

There is rack type device SCORPIO 1000 (S1000), it provides full coverage of the Last Mile with a variety of technologies, rates, interfaces and media. The system supports standard technologies such as G.SHDSL or optical connected with MUXpro 700. Each card in the S1000 is in a point-to-point configuration opposite to a remote unit with no connection to the adjacent cards. This allows totally independent operation among the ports and cards on the S1000. Three types of technologies will be provided in S1000: 2-wire G.SHDSL modems, 4-wire G.SHDSL modems, and fiber optic MUX.

MUXpro 700's data interfaces allow modem connectivity via a wide range of DTE interfaces. These interfaces include T1, E1, DATA (V.35, V.36 / RS449, X.21, RS-530), or Ethernet.

1.2 Applications

The System consists of a central unit at central office, and a remote unit, at customer premises.

The services are extended through the technologies of fiber. Various interface extensions are supported: E1, T1, DATA (V.35, V.36 / RS449, X.21, RS-530), and Ethernet (MUXpro 700 can be acted as a hub through the four LAN ports on the front panel).

Figure 1-1 and Figure 1-2 show two typical applications. Figure 1-3 depicts the possible interface configurations.

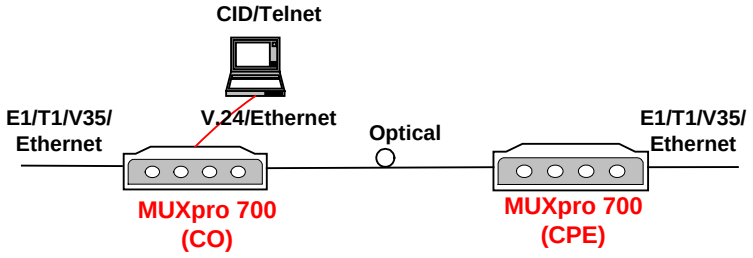


Figure 1-1 Application of Back-to-back

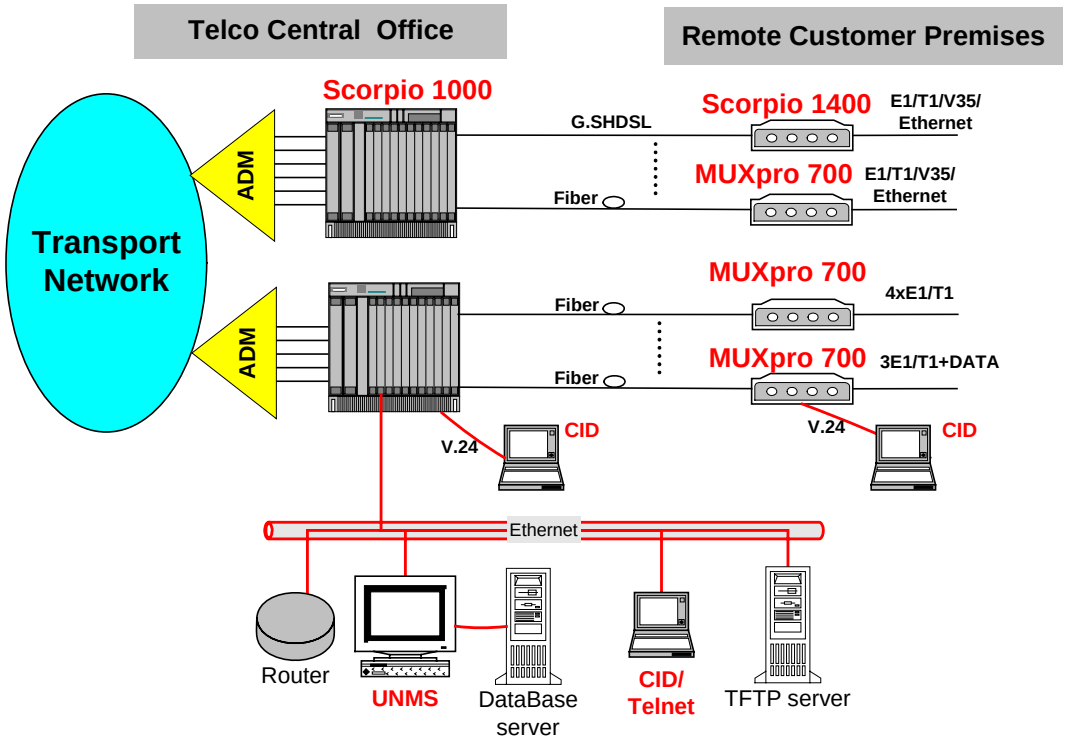


Figure 1-2 Application of S1000/MUXpro 700 System

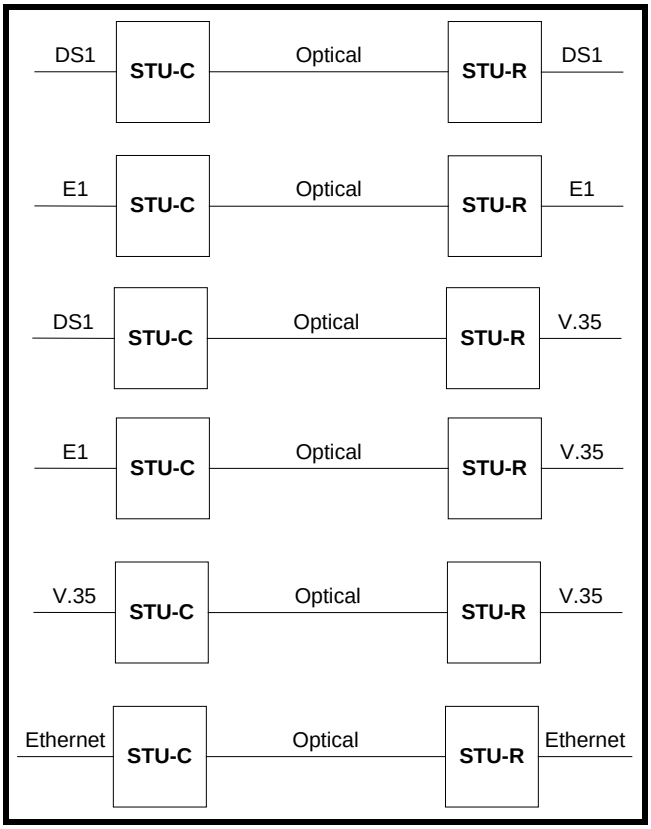


Figure 1-3 Possible Interface Configuration of S1000/MUXpro 700 System

Note that MUXpro 700 can be configured as STU-C or STU-R, whereas MUXpro 700 should be an STU-R when connected with S1000.

Chapter 2. Specification

To let the user understand TAINET MUXpro 700, this chapter begins with its main features. Then, the chapter continues to present the FIBER interface, the network side interface, timing and synchronization, OAM (Operation, Administration and Maintenance) and technical specifications. The last part of this chapter is devoted to the applications of TAINET MUXpro 700 family in different networks, which include cellular network, campus network and E1 network.

2.1 Main Features

Listed below are the main features of the MUXpro 700:

- MUXpro 700 supports DTE interface: T1, E1, DATA (V.35, X.21, RS-530, V.36 / RS449), Ethernet.
- Support line data rate of 125Mbps.
- Transmission distance is up to 40Km.
- Support either 4*E1/T1 + Ethernet or 3*E1+DATA+Ethernet connection for application.
- Support Timing and Synchronization: Local (internal) timing , Line timing (loop received clock), DTE timing.
- For test and diagnostic purpose the MUXpro 700 system provides various loopback activated and deactivated function.
- Management by UNMS or CID.
- Remote control / monitoring via Telnet and Ethernet.
- Two optical line interfaces support 1:1 line backup (redundancy) function.
- Remote software upgrade via TFTP.

2.2 Optical Interface

- Single Mode.
- Connector: FC/PC or SC.
- Laser Wavelength: 1310/1550nm for single mode operation.
- Fiber Size: 9/125 um.
- Transmit Power: -5 dBm (min).
- Receive Power: -34 dBm (min) (For BER 10^{-10}).
- Dynamic Range: 29 dB (For BER 10^{-10}).

2.3 Network Side Interface

2.3.1 T1 Interface

- Bit Rate: 1,544 Kbit / s ± 50 ppm.
- Frame Format: SF (D4), ESF, field selectable.
- Line Code: AMI or B8ZS, field selectable.
- Impedance: Nominal 100 ohms ± 5% resistive.
- Jitter performance: Meet ITU-T G.824 requirements.
- Physical Connection Type: DB25 (female) or RJ-45 (100 ohms) in Connector Module.
- CRC: CRC-6

2.3.2 E1 Interface

- Comply with G.703 Standard.
- Bit Rate: 2,048 Kbit / s ± 50 ppm.
- Frame Format: meet ITU-T G.704 standard.
- Line Code: High Density Bipolar of Order 3 (HDB3).
- Impedance: Nominal 120 ohms ± 5% or 75 ohm.
- Jitter performance: Meet ITU-T G.823 requirements.
- CRC: CRC-4.
- Physical Connection Type: DB25 (female) or RJ-45 (120 ohms) in Connector Module.

2.3.3 V.35 Interface

- Software configurable for V.35 or RS530 or RS-449/V.36 or X.21.
- Data inversion (Normal Data or Inverse Data mode selected).
- Date rate: n x 64K bps (n = 1 to 32).

- Connector: DB-25 with adaptive cable.
- Clocking mode: Internal, DTE, or Line.
- Clock inversion.
- Control lead:
  - X.21: C/I.
  - V.35: DTR/RTS/DSR/DCD/CTS/TM.
  - V.36: DTR/RTS/DSR/DCD/CTS.

2.3.4 Ethernet Interface

- Meet IEEE 802.3 Relative requirements.
- Connector: RJ-45.
- 10/100M Auto-Negotiation.

2.4 User Interface

2.4.1 Connectors

- Optical port: FC/PC or SC.
- Ethernet port: RJ-45.
- E1/T1 port: DB25 (female).
- DATA port: DB25 (female)

2.5 Timing and Synchronization

Table 2-1 shows three modes to be field selectable.

Table 2-1 Timing and Synchronization

Mode Number	STU-C Symbol Clock Reference	STU-R Symbol Clock Reference	Example Application	Mode
1	Local oscillator (internal timing)	Received symbol clock	"Classic" HDSLP	Plesiochronous
2	Transmit data clock (DTE timing)	Received symbol clock	Main application is synchronous transport in both directions.	Synchronous
3	Transmit data clock (DTE timing)	Received symbol clock	Synchronous downstream transport and bit-stuffed upstream is possible.	Hybrid: downstream Synchronous upstream: Plesiochronous

2.6 OA&M

OA&M (Operation, Administration, and Maintenance) of the MUXpro 700 is listed below:

2.6.1 Interface & Self Test

- Transparent UART over 100Base-Fx Ethernet Link for in-band management.
- LEDs for local monitor and simple trouble-shooting.
- CPU self test
- ROM, RAM, interface chipset read/write
- Fiber interface loop back test
- E1/T1 interface loop back test
- DATA interface loop back test
- Power monitoring

2.6.2 Maintenance

- Power On Self-Test.
- Watch Dog Timer.
- Commanded by CPU.

2.6.3 Alarm

- Fiber interface LOS.
- T1/E1 interface LOS.
- T1/E1 interface AIS.
- T1/E1 interface LOF.
- T1/E1 interface RAI.

2.7 Other Technical Specifications

Table 2-2 gives the other specifications of the MUXpro 700.

Table 2-2 Other Specifications of the MUXpro 700

Size	
Dimension	212mm(W) x 286mm(D) x 42mm (H)
Safety	
Vibration	Meet FCC part 68 requirements
Safety	Meet EN60950, FCC part 68 requirements
EMI/EMC	Meet CE & FCC part 15 class B requirements
Power Requirement	
Input	AC input or DC input voltage: 110V~220VAC or -48VDC
Power Consumption	10 W (TBD)
Environments	
Temperature	Operation: 0 ~ 45 ºC Storage and Transportation: -20 ~ 70 ºC
Humidity	Operation: 5 ~ 90 % RH (Relative Humidity) Storage and Transportation: 5 ~ 95 % RH

2.8 Applications

The application of TAINET MUXpro 700 is very similar with TAINET Scorpio 1400 systems, which include cellular network, campus network and E1/T1 network but the line media. The optical media can support longer transmitted distance and wider bandwidth prevented it from interfering. The transmission distance of single mode optical fiber can be reach to 40Km according to the standard.

2.8.1 Cellular Network

The cellular network user will need to lease larger numbers of E1 circuits in order to connect remote cell sites to mobile telephone switching offices (MTSOs). TAINET MUXpro 700 provides an alternative to standard repeater E1 service. Figure 2-1 shows a cellular network application.

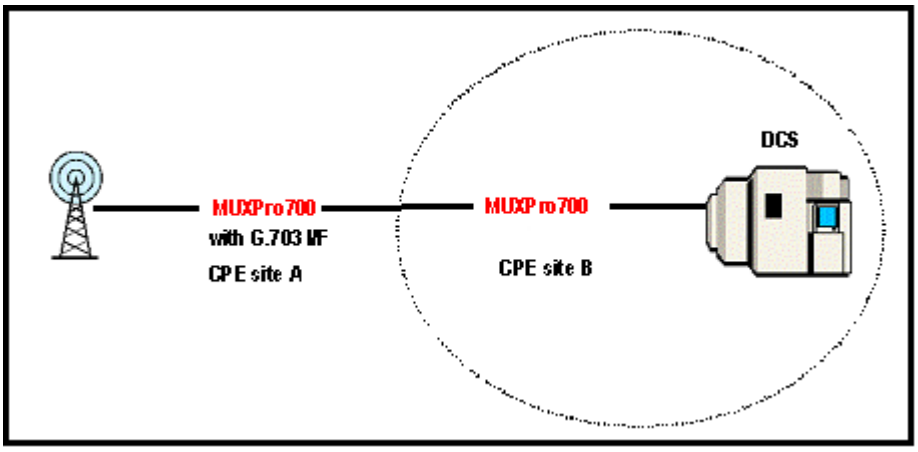


Figure 2-1 Point to point Interconnection is instead of E1

2.8.2 Campus Network

The MUXpro 700 is well suited to the campus applications. Figure 2-2 and Figure 2-3 show two general campus applications where remote PBX or routers are interconnected across a campus using two MUXpro 700. One unit is

configured as a central office site (CO) unit and the other is the customer premise equipment (CPE) unit.

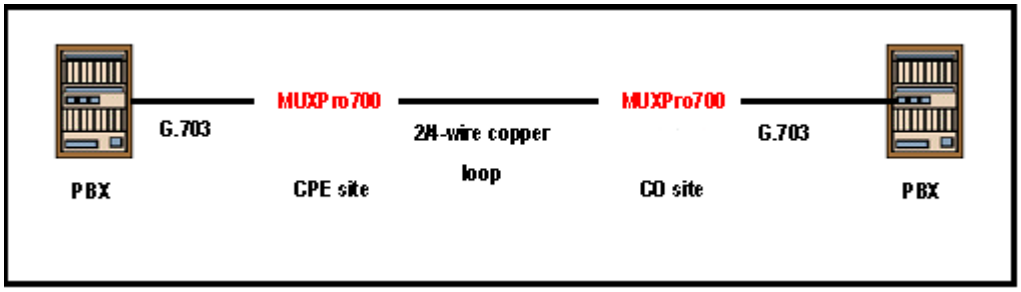


Figure 2-2 Network Application of MUXpro 700 with G.703 I/F

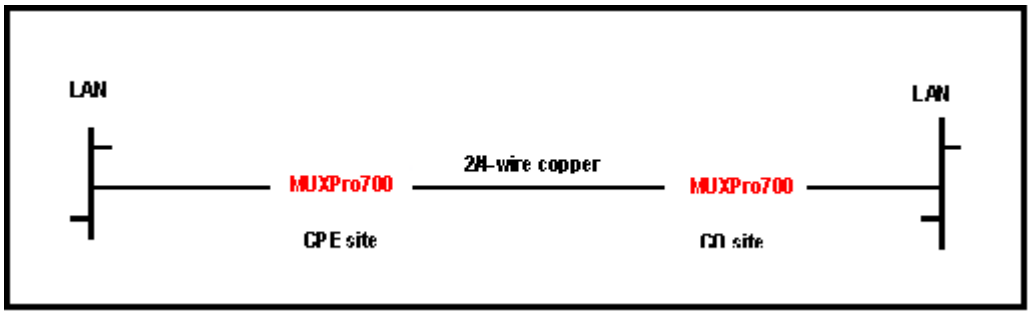


Figure 2-3 Network Application of MUXpro 700

Each MUXpro 700 is configured at the factory to operate on the CO side of an E1 connection. However, you can easily modify settings intended for the CO into settings for CPE.

2.8.3 E1 Network

The MUXpro 700 can be deployed to replace traditional E1 network, without the repeater in the E1 network and effectively the utilization of the existing twisted copper pair.

Chapter 3. Interfacing

In this chapter, we will focus on the interfaces of MUXpro 700. First, the front panel of MUXpro 700 will be discussed. After that, we will examine in more detail the rear panel of MUXpro 700.

3.1 Front Panel

The front panel of MUXpro 700, as illustrated in Figure 3-1, contains four main sections, i.e. the LAN RJ45 connector, optical interfaces, LED indicators and management RJ45 interface.

From the status indicators of front panel, users can obtain useful information to monitor the status of the MUXpro 700.

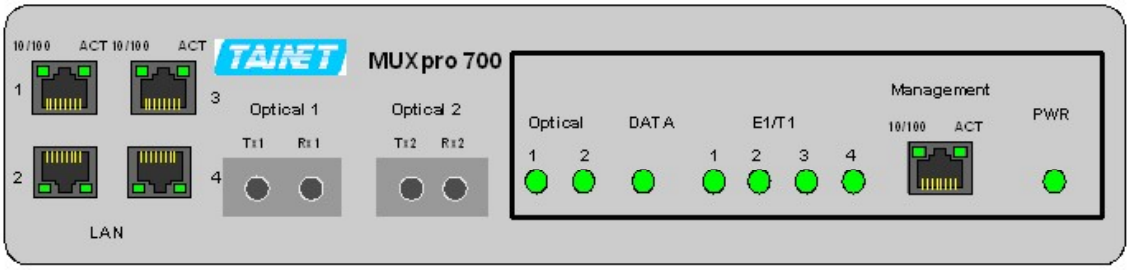


Figure 3-1 Front Panel of MUXpro 700

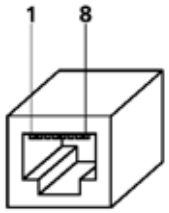
3.1.1 Indicators Status

The status indicators of the MUXpro 700 are depicted in Table 3-1. There are eight LEDs, which are Optical 1, Optical 2, DATA, E1/T1 1, E1/T1 2, E1/T1 3, E1/T1 4 and power. These LEDs display the system status.

Table 3-1 Indicators on Front Panel

LED	*Description*	*Color*	*Off*	*Flashing 0,5 sec*	*Always On*
PWR	Power	Green	No Power	N/A	Power OK
DATA	DATA CPE	Green Red	Failure	N/A	OK
Optical 1, 2	Loop	Green	Failure	Handshaking /Training	Connecting
					Idle
E1/T1 1,2,3,4	E1/T1 CPE	Green Red	N/A	N/A	Traffic OK Failure

3.1.2 Ethernet RJ-45 Pin Assignment



Pin	Description
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	NC

Table 3-2 Ethernet RJ-45 Pin Assignment

3.2 Rear Panel

Figure 3-2 shows the rear panel of MUXpro 700. User may connect MUXpro 700 to other devices or equipments via these interfaces.

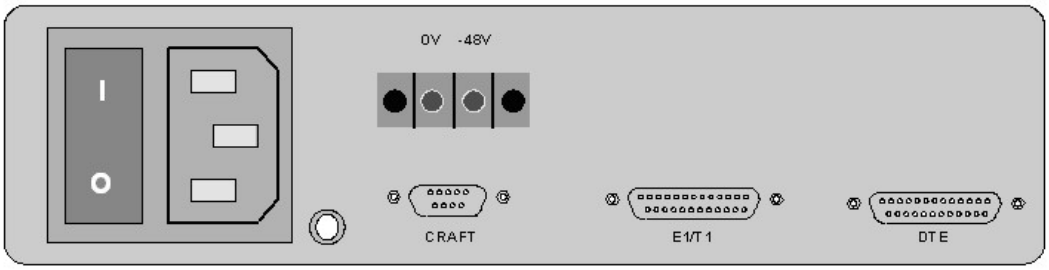


Figure 3-2 Rear Panel of MUXpro 700

The following connectors/devices appear on the rear panel of MUXpro 700.

- 1 Power On / Off: The MUXpro 700's power switch
- 2 Power Receptacle: Power plug for a AC power cable
- 3 DC Power Connector: Power connector for DC power
- 4 Ground Terminal: Ground output terminal, connect to earth
- 5 Craft Interface: 9 pin female serial D-sub connector
- 6 E1/T1 Connector: E1/T1 interface
- 7 DTE Connector: Data terminal equipment port

MUXpro 700 supports various DTE (Data Terminal Equipment) interfaces depending on user requirements and it can be selected by software-control. Connector type is a 25 pins female connector for E1/T1, V.35, X.21, RS-530, and V.36 / RS449. Tainet will provide the cable converter for various interfaces.

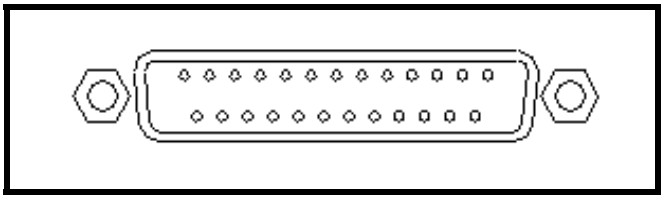


Figure 3-3 DB-25 for E1/T1 and various DTE Interface

E1 / T1 interface uses a D-sub25 connector. Pin descriptions are shown in the following table.

Table 3-3 4E1/4T1 interface pin assignment

Pin number	Description	Pin number	Description
1	-	14	PortD transmit +
2	PortD transmit –	15	-
3	PortD receiver +	16	PortD receiver –
4	-	17	PortC receiver –
5	PortC receiver +	18	-
6	PortC transmit –	19	PortC transmit +
7	-	20	PortB transmit +
8	PortB transmit –	21	-
9	PortB receiver +	22	PortB receiver –
10	-	23	PortA receiver –
11	PortA receiver +	24	-
12	PortA transmit –	25	PortA transmit +
13	-		

3.2.1 E1 and T1 RJ-48 Pin Definition for Interface

Table 3-4 RJ-48 E1/T1 pin definition

Pin number	Description	Pin number	Description
1	Receiver -	5	Transmit +
2	Receiver +	6	
3	-	7	
4	Transmit -	8	

Chapter 4. Installation

In this chapter, we will present the installation guide for MUXpro 700. It begins with a checklist for unpacking the shipping package.

4.1 Unpacking

MUXpro 700's shipping package includes the following items:

- 1 MUXpro 700 standalone unit
- 1 User's manual
- 1 Power cable
- 1 DB-25 to 4E1 cable converter
- Optional items (users specify the type of DATA port)
  - DB25 to ITU-T V.35 / RS530 / X.21 DATA interface
    - V.35 cable
    - X.21 cable
    - RS-530 cable
    - V.36 cable

Chapter 5. Operation of CID

In this chapter, you will be introduced to CID (Craft Interface Device), VT-100 operation of MUXpro 700. The chapter starts with an overview of MUXpro 700's CID. In addition, each main menu item of the MUXpro 700's CID, such as Configuration, Monitor, Software Download and Diagnosis, will be discussed.

5.1 Overview

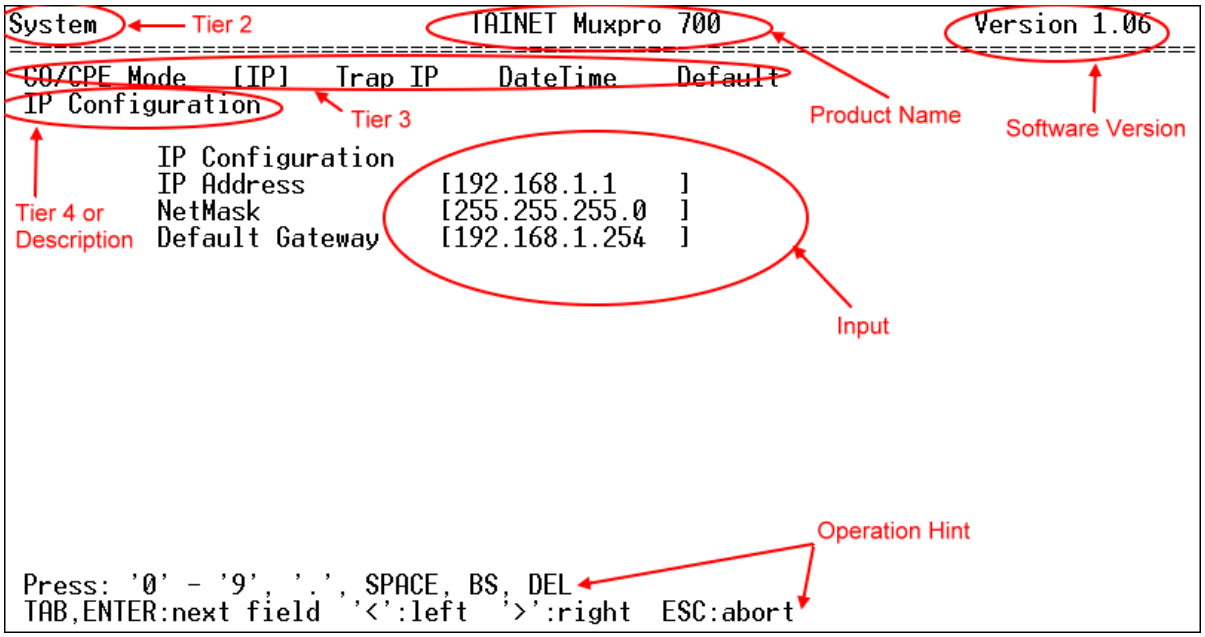
The craft port for configuration is set to Speed: 115200, Data bit: 8, Parity: n, Stop bit: 1, Flow control: n. When startup the device, the following messages will appear before the screen displays the Application software code.

```
RAM test OK!!SelfTest1 ... OK

SelfTest2 ... OK

SelfTest3 ... OK
Run AP!!a' in 1 second-->into Diagnostic mode, or to AP:
dwHeaderCheckSum=0xd6d038e1 14:52:44
.............................................................._
```

At startup of the AP, press Enter, the CID will prompt user to enter the password for access into the system. Both of default user name and password are "tainet".

```
!!! Welcome to Access TAINET Muxpro 700 !!!

     Please Enter User Name : tainet
                  Password : ******
```

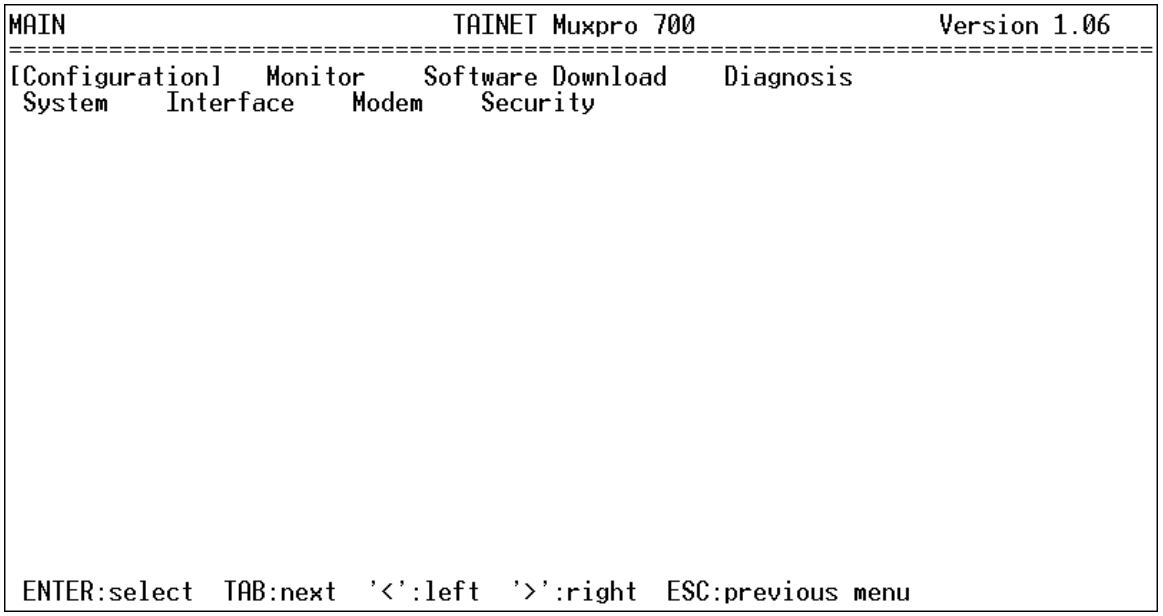
The CID offers user-friendly menu-driven user interface. The following figure depicts the structure of the interface. The top tier command options include Configuration, Monitor (status), Software Download and Diagnosis (Trouble Shooting).



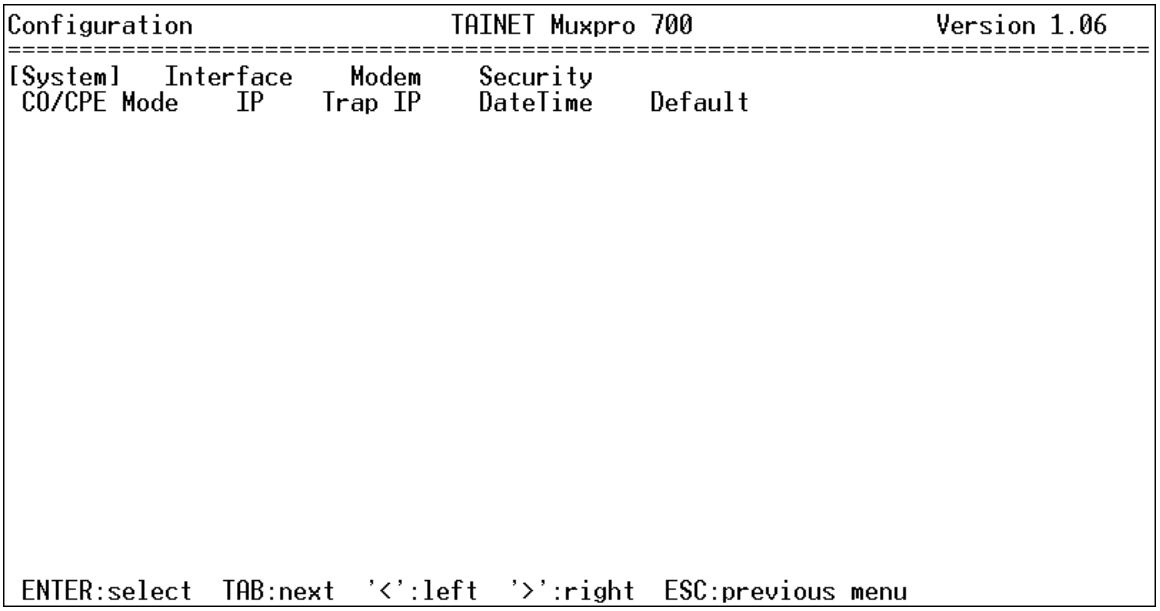
- Product Name: TAINET MUXpro 700
- Software Version: Software version of MUXpro 700
- Tier 2: The second tier of the current screen
- Tier 3: The next tier of the current screen
- Tier 4 or Description: The fourth tier of the current screen and/or its description
- Input: The parameters set by user
- Operation Hint: Hints for user during operation

5.2 Configuration

After password checked, CID will bring up main menu as following interface. There are four items under configuration, such as System, Interface, Modem, and Security.

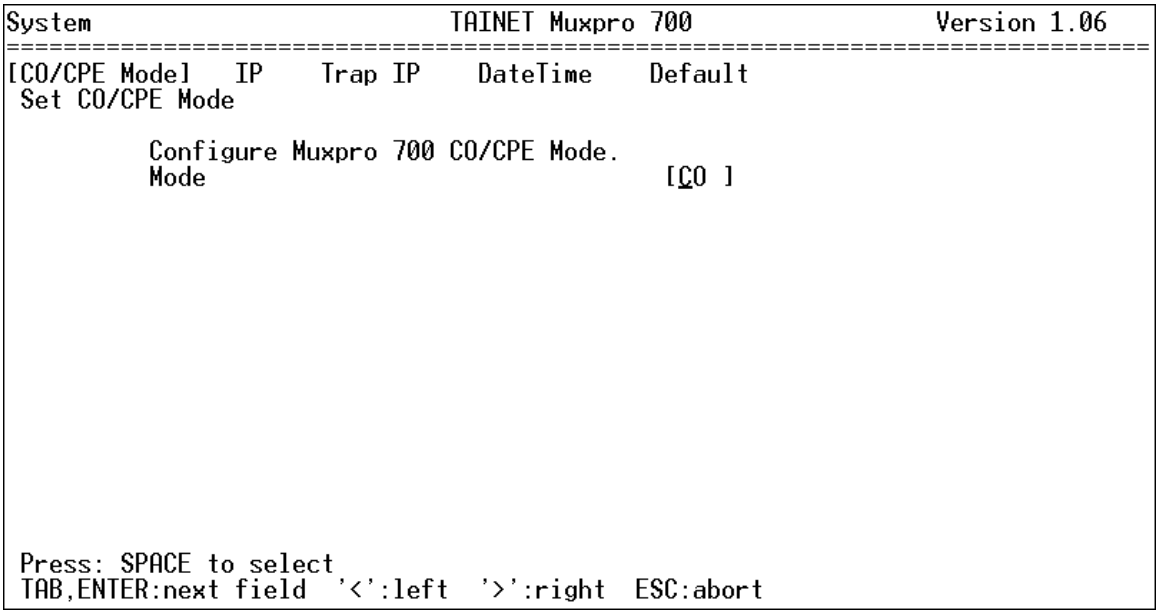

MAIN TAINET Muxpro 700 Version 1.06
[Configuration] Monitor Software Download Diagnosis
System Interface Modem Security
ENTER:select TAB:next '<':left '>':right ESC:previous menu

5.2.1 Configuration–System


Configuration TAINET Muxpro 700 Version 1.06
[System] Interface Modem Security
CO/CPE Mode IP Trap IP DateTime Default
ENTER:select TAB:next '<':left '>':right ESC:previous menu

Before you can remote control / monitoring the device. Setting IP address is required for managing the system via the Management Ethernet port in the Front Panel. This is a must for Telnet and TFTP management.

Configuration-System-CO/CPE Mode


System TAINET Muxpro 700 Version 1.06
[CO/CPE Mode] IP Trap IP DateTime Default
Set CO/CPE Mode
Configure Muxpro 700 CO/CPE Mode.
Mode [CO]
Press: SPACE to select
TAB,ENTER:next field '<':left '>':right ESC:abort

The CO device generates the source clock. In opposite device, should be set to CPE mode to follow the CO clock.

Configuration-System-IP

```
System                          TAINET Muxpro 700                  Version 1.06
================================================================================
 CO/CPE Mode   [IP]   Trap IP    DateTime    Default
 IP Configuration

          IP Configuration
          IP Address          [192.168.1.1    ]
          NetMask             [255.255.255.0  ]
          Default Gateway     [192.168.1.254  ]









 Press: '0' - '9', '.', SPACE, BS, DEL
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

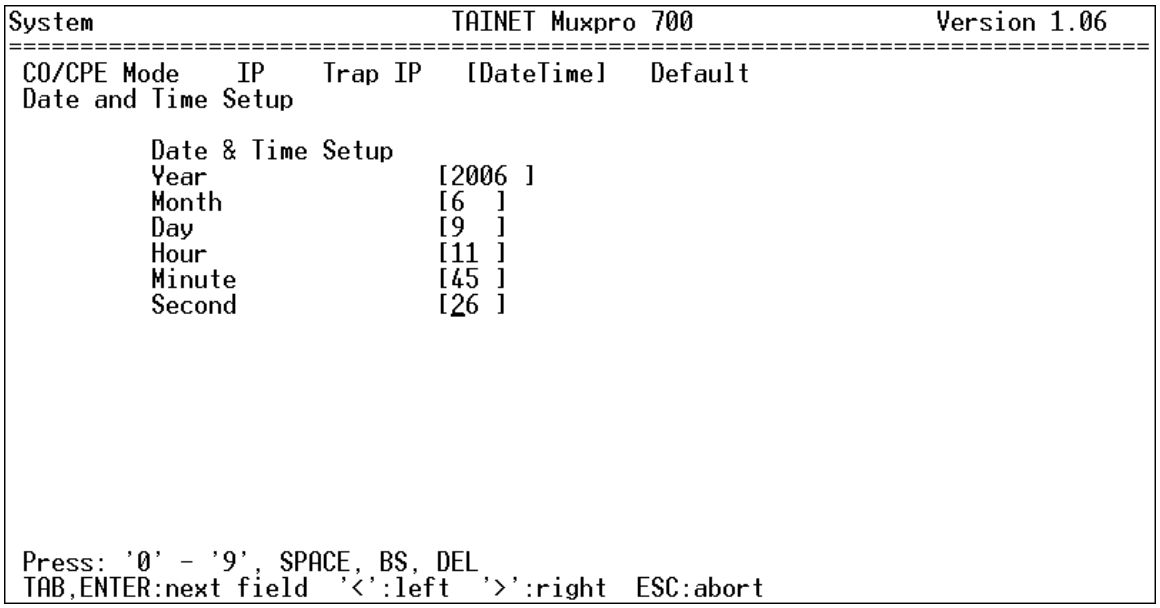
Above step sets the local device's IP address. The IP address has to be in the same sub-network with your remote computer IP address.

Configuration-System-Trap IP

```
System                          TAINET Muxpro 700                  Version 1.06
================================================================================
 CO/CPE Mode    IP   [Trap IP]   DateTime    Default
 Trap IP Configuration

          TrapIP Configuration
          Trap IP0 Address       [210.65.231.120 ]
          Trap IP0 Status        [Inactive]
          Trap IP1 Address       [0.0.0.0        ]
          Trap IP1 Status        [Inactive]
          Trap IP2 Address       [0.0.0.0        ]
          Trap IP2 Status        [Inactive]
          Trap IP3 Address       [0.0.0.0        ]
          Trap IP3 Status        [Inactive]
          Trap IP4 Address       [0.0.0.0        ]
          Trap IP4 Status        [Inactive]









 Press: '0' - '9', '.', SPACE, BS, DEL
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

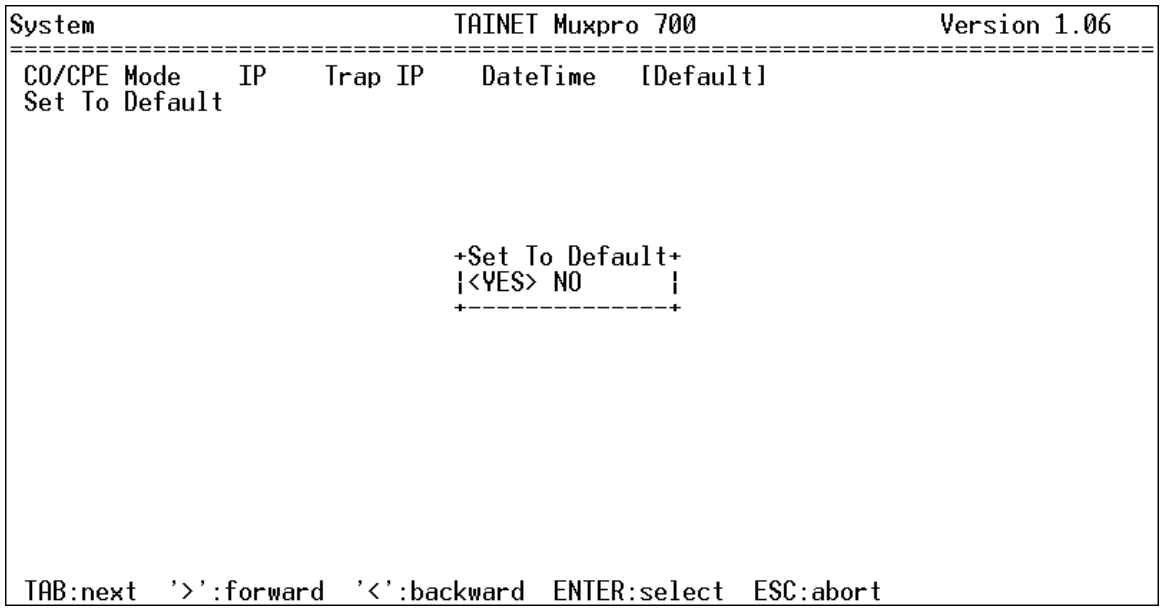
MUXPro 700 supports five separate points for Network Management System. The Trap IP is the IP address of remote system (NMS). After set the IP address, switch status to "active" to enable the selected Trap IP.

Configuration-System-Date Time


System TAINET Muxpro 700 Version 1.06
CO/CPE Mode IP Trap IP [DateTime] Default
Date and Time Setup
Date & Time Setup
Year [2006]
Month [6]
Day [9]
Hour [11]
Minute [45]
Second [26]
Press: '0' - '9', SPACE, BS, DEL
TAB,ENTER:next field '<':left '>':right ESC:abort

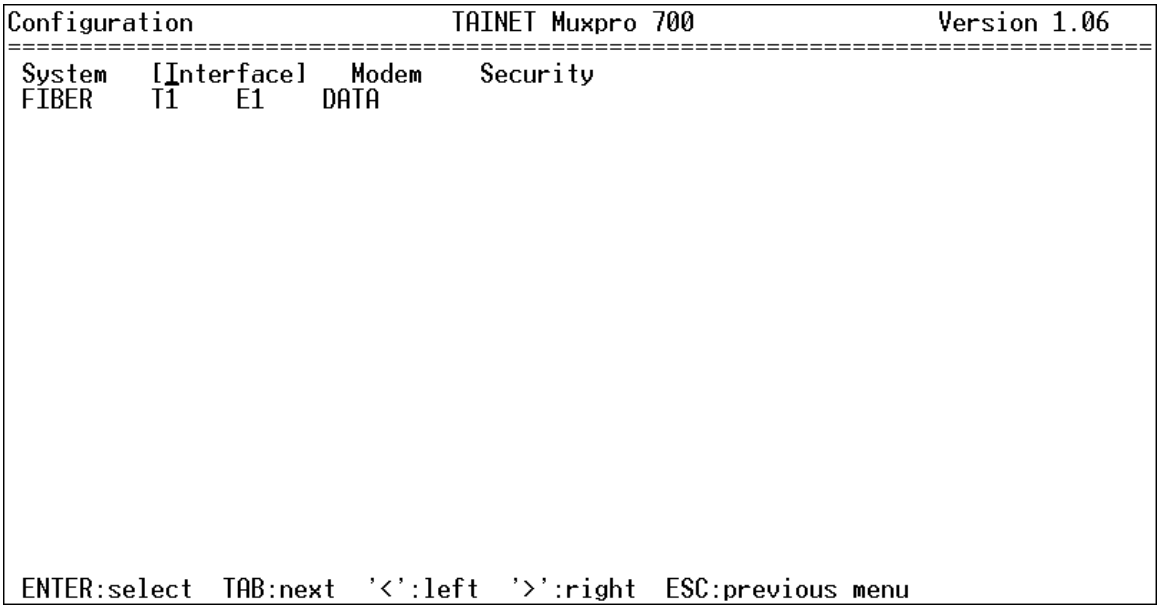
The system provides RTC (Real Time Clock) and supports BCD coded century, year, month, date, day, hours, minutes, and seconds with automatic leap year compensation valid up to the year 2100.Set the Date / Time to correctly time-stamping the alarm or PM data report. The date/time will be stored in non-volatile memory, so data will not be lost even when powering off the system (MPU).

Configuration-System-Default


System TAINET Muxpro 700 Version 1.06
CO/CPE Mode IP Trap IP DateTime [Default]
Set To Default
+Set To Default+
|<YES> NO |
+--------------+
TAB:next '>':forward '<':backward ENTER:select ESC:abort

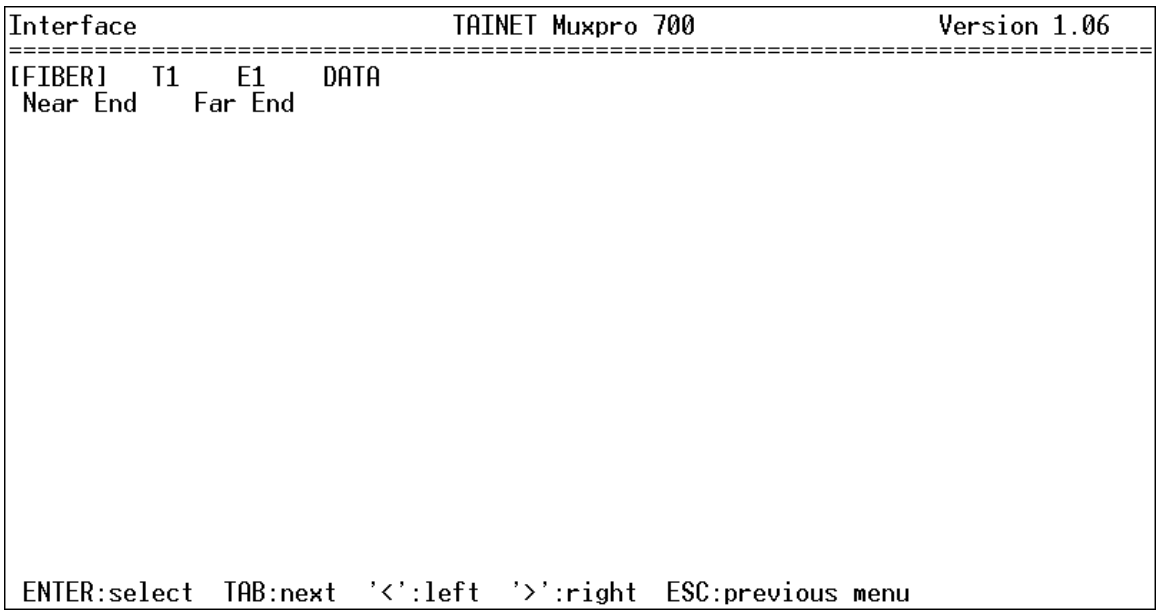
Reset the configuration of the device to default values.

5.2.2 Configuration–Interface


Configuration TAINET Muxpro 700 Version 1.06
System [Interface] Modem Security
FIBER T1 E1 DATA
ENTER:select TAB:next '<':left '>':right ESC:previous menu

There are four interface types, which are FIBER, E1, T1 and DATA, available for the MUXpro 700. In addition, the DATA interface also includes V.35, X.21, V36 / RS499, and RS530 types.

Configuration–Interface–FIBER



There are two sub-items for FIBER parameters, which are Near End and Far End. Near End is the device you are controlling and the corresponding device is Far End. Users can set the parameters of Near End and/or Far End device.

Configuration–Interface–FIBER-Near End

```
FIBER                          TAINET Muxpro 700                  Version 1.06
================================================================================
[Near End]   Far End
 Configure Fiber Near End Parameter


                    OE OPTION            [Hardware Auto Selection]
                    OE LOOP              [OE1]
                    DATA PORT LOCATION    PORT4









 Press: SPACE to select
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

- OE OPTION: The configurable values are Hardware Auto selection or Software configuration. The near end site will connect itself with far end site automatically when selected Hardware Auto selection. Or, the connection is established by user defined (OE1 or OE2) when the Software configuration was selected.
- OE LOOP: The value of this optical loop selection is OE1 or OE2. OE1 is the master line interface. OE2 is the backup line for OE1.
- DATA PORT LOCATION: EMPTY or PORT4 (fixed)

Configuration–Interface–FIBER-Far End

```
FIBER                          TAINET Muxpro 700                  Version 1.06
================================================================================
 Near End   [Far End]
 Configure Fiber Far End Parameter


                    OE OPTION            [Hardware Auto Selection]
                    OE LOOP              [OE1]
                    DATA PORT LOCATION    PORT4









 Press: SPACE to select
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

- OE OPTION: The configurable values are Hardware Auto selection or Software configuration.
- OE LOOP: The value of this optical loop selection is OE1 or OE2. OE1 is the master line interface. OE2 is the backup line for OE1.
- DATA PORT LOCATION: EMPTY or PORT4 (fixed)

Configuration–Interface–T1

```
T1                                TAINET Muxpro 700                    Version 1.06
================================================================================
[Parameters]
 Near End    Far End









 ENTER:select  TAB:next  '<':left  '>':right  ESC:previous menu
```

MUXpro 700 supports one T1 interface to extend the transmission service. Near End is the device you are controlling and the corresponding device is Far End.

Configuration-Interface-T1-Near End

```
Parameters                        TAINET Muxpro 700                    Version 1.06
================================================================================
[Near End]   Far End
 Configure T1 Near End Parameters




                    Configure T1 Parameters
                    PortNO                      PORT1
                    Frame Mode                  Unframed
                    Line Coding                 [B8ZS]
                    Idle Pattern                [0xff]
                    Cable Length (ft.)          [533~655]




 Press: SPACE to select
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

There are four ports on the MUXpro 700 (no data interface selected). User has to specify the associated port from port1 to port4.

- Frame Mode: Unframed mode only
- LineCoding: AMI or B8ZS
- Idle Pattern: Sending pattern on the unused time slots. The possible values are 0x7f and 0xff.
- Cable Length: Possible values are 0-133, 133-266, 266-399, 399-533, and 533-655. T1 circuit provides the function of cable length (from 0 to 200 meters) compensation.

Configuration–Interface–E1

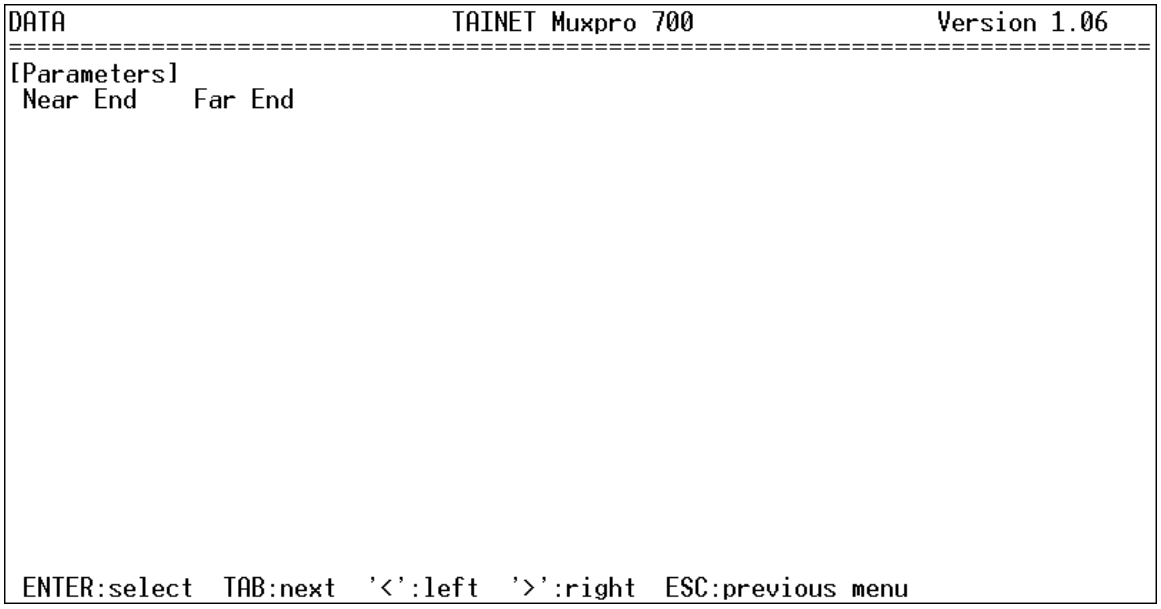
```
E1                              TAINET Muxpro 700                  Version 1.06
================================================================================
[Parameters]
 Near End    Far End









 ENTER:select  TAB:next  '<':left  '>':right  ESC:previous menu
```

Configuration-Interface-E1-Parameter-Near End

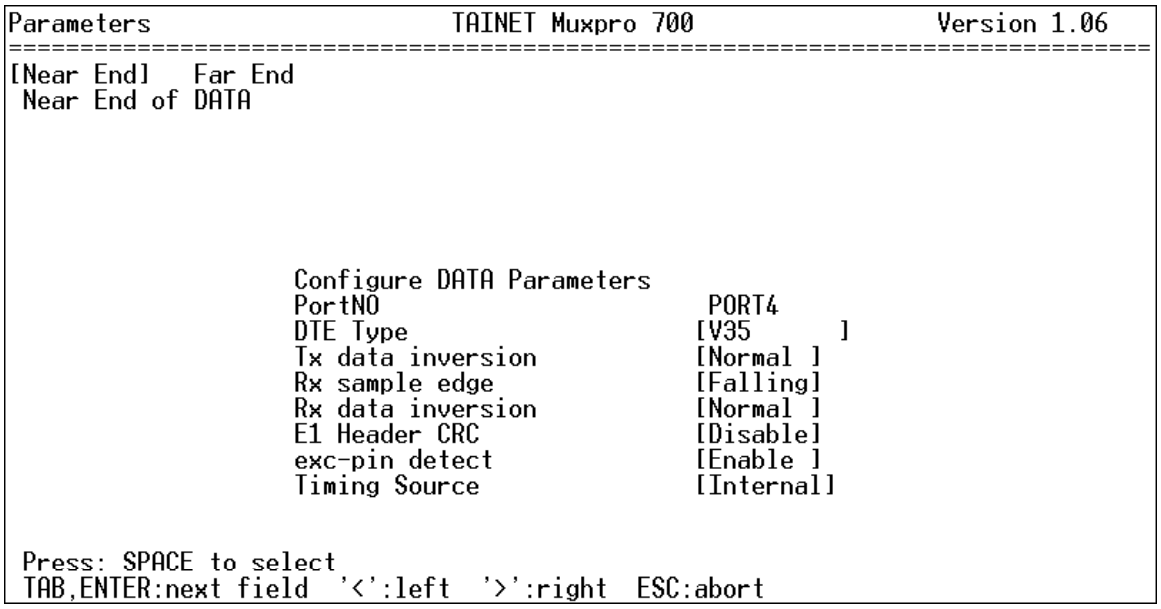
```
Parameters                      TAINET Muxpro 700                  Version 1.06
================================================================================
[Near End]   Far End
 Near End of E1




                    Configure E1 Parameters
                    PortNO                      PORT1
                    Frame Mode                  Unframed
                    Impedance                   Balance
                    Idle Pattern               [0xff]




 Press: SPACE to select
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

- Frame Mode: Unframed only
- Impedance: Hardware automatically selected. Nominal 120 ohms resistive symmetrical (Balance) pair or 75 ohm asymmetrical (Unbalance) pair
- Idle Pattern: Bit sending pattern in the unused time slots. The possible values are 0x7f and 0xff.

Configuration–Interface–DATA



Configuration-Interface-DATA-Parameters-Near End


Parameters TAINET Muxpro 700 Version 1.06
[Near End] Far End
Near End of DATA
Configure DATA Parameters
PortNO PORT4
DTE Type [V35]
Tx data inversion [Normal]
Rx sample edge [Falling]
Rx data inversion [Normal]
E1 Header CRC [Disable]
exc-pin detect [Enable]
Timing Source [Internal]
Press: SPACE to select
TAB,ENTER:next field '<':left '>':right ESC:abort

- DTE Type: V35, V36 / RS449, X21, or RS530
- Tx/Rx data inversion: normal or inverse. The V.35 interface of STU-R provides data inversion capability used to protect against the occurrence of low pulse density.
- Rx sample edge: Rising or Falling
- E1 Header CRC: disable or enable
- Exc-pin detect: Enable or Disable the external clock pin detection of V.35 interface
- Timing Source: Internal, DTE, or Line

5.2.3 Configuration–Modem

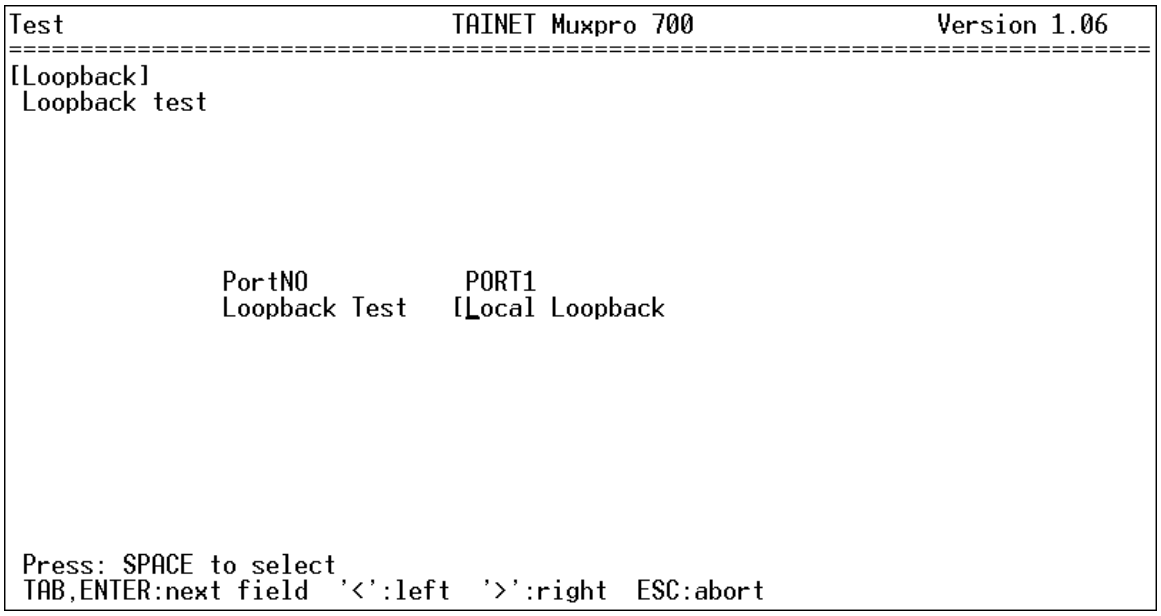
Configuration-Modem-Parameter

```
Modem                              TAINET Muxpro 700                    Version 1.06
================================================================================
 [Parameters]   Test
 Configure Modem Parameters




          Set Required Modem Type
          Actual Modem Tpye of Near End                    FIBER-DATA-E1T1
          Configure Modem Type of Near End                [FIBER-DATA-E1]
          Actual Modem Tpye of Far End                     FIBER-DATA-E1T1
          Configure Modem Type of Far End                 [FIBER-DATA-E1]
          Modem Data Rate:E1(32)T1(24)Data(1~32)*64kbps   [32    ]




 Press: SPACE to select
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

- Required Modem Type: To select the DTE interface type for near-end and far-end. The possible values are listed below:
  - FIBER-E1-4P
  - FIBER-T1-4P
  - FIBER-DATA-E1
- Modem Data Rate: To select the data rate for near-end or far-end. The data rate of E1 interface (unframed mode only) must be 32, and it of T1

interface (unframed mode only) must be 24. For Data interface, the value can be 1 to 32.

Configuration-Modem-Test



For test and diagnostic purpose, MUXpro 700 provides various Loopback paths at selected port, which are depicted in Figure 5-1 and Figure 5-2. It includes Local Loopback, Remote Loopback, Local Payload Loopback, and Remote Payload Loopback at Near End.

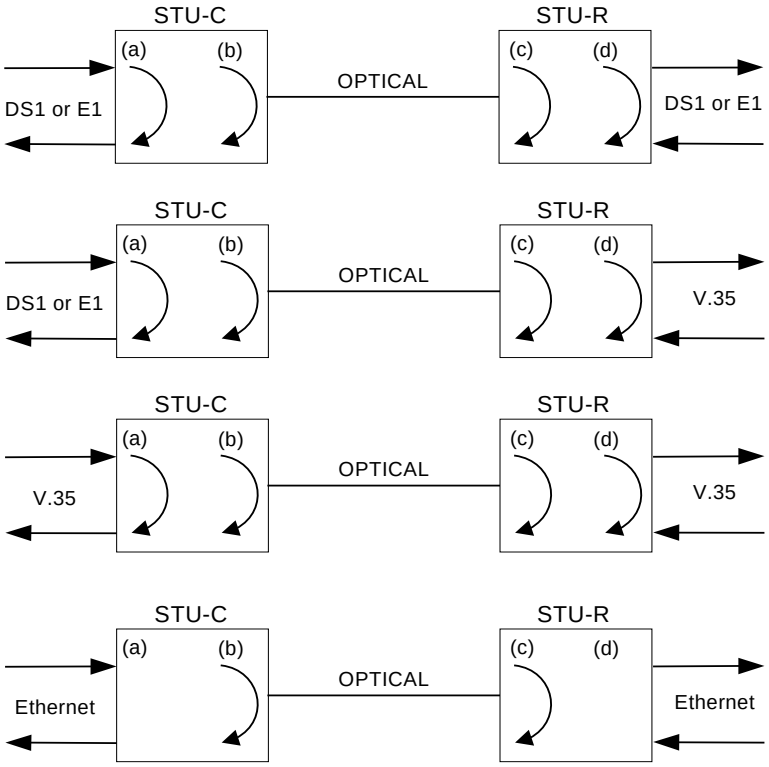


Figure 5-1 STU-C Side Activated Loopback

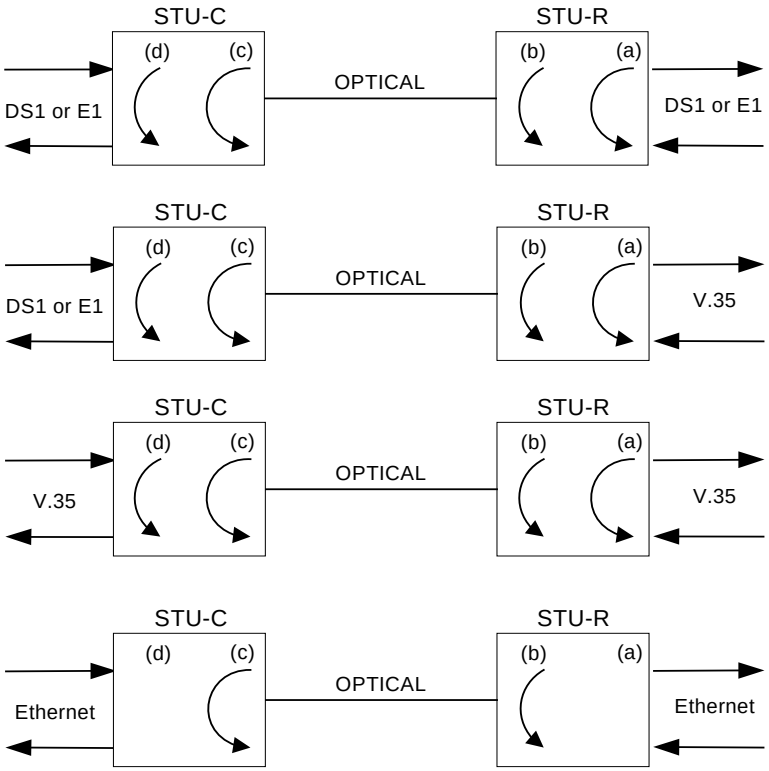
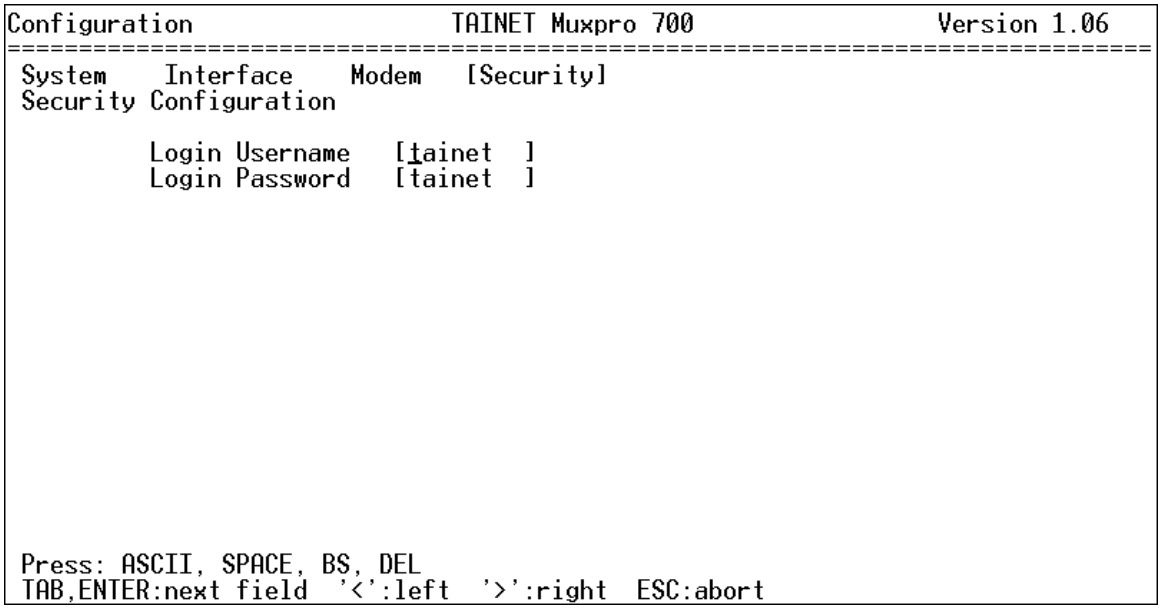


Figure 5-2 STU-R Side Activated Loopback

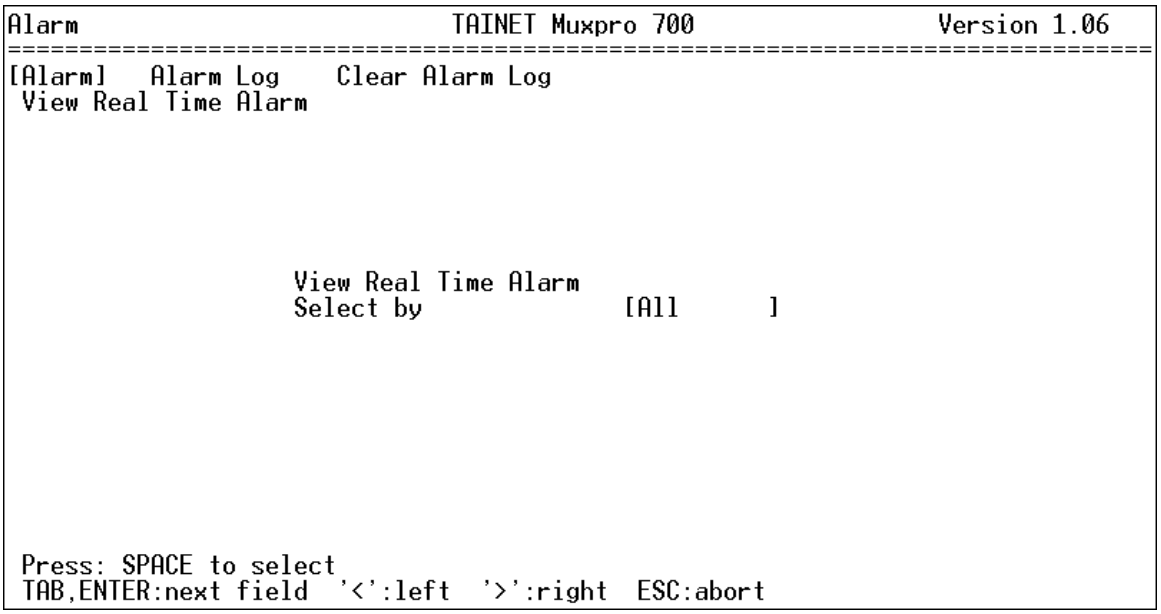
- Loopback Test: Possible values are
  - Normal
  - Local Loopback
  - Remote Loopback
  - Local PayLoad Loopback
  - Remote PayLoad Loopback
  - Be Remote Loopback (FarEnd command, Read Only)
  - Be Remote PayLoad Loopback (FarEnd command, Read Only)

5.2.4 Configuration-Security

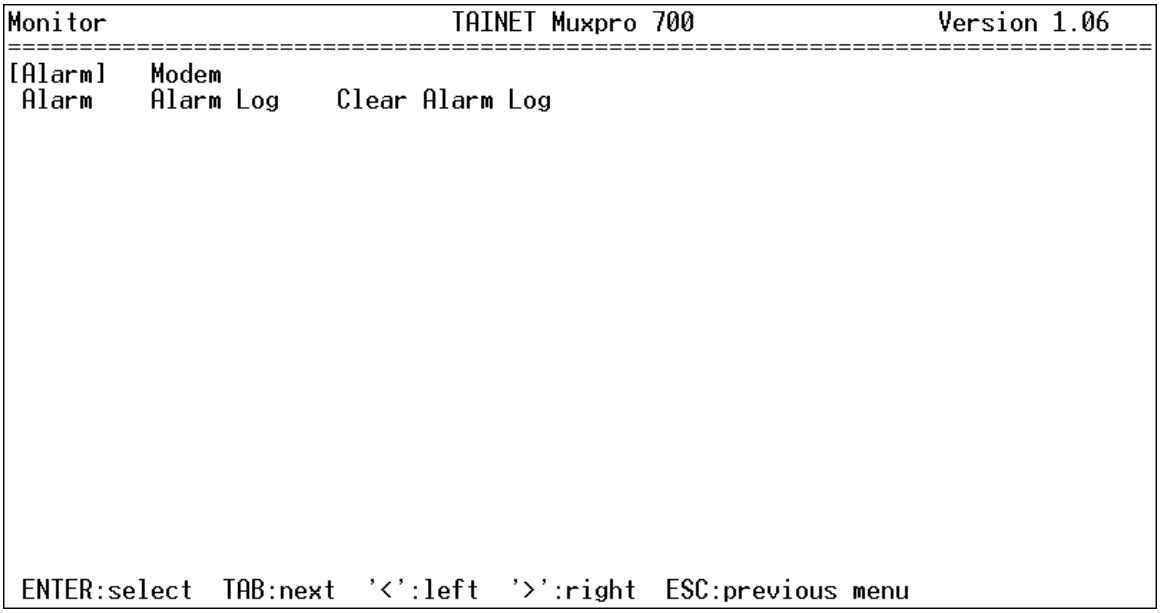

Configuration TAINET Muxpro 700 Version 1.06
System Interface Modem [Security]
Security Configuration
Login Username [tainet]
Login Password [tainet]
Press: ASCII, SPACE, BS, DEL
TAB,ENTER:next field '<':left '>':right ESC:abort

For security, users can change username and password for console or telnet login.

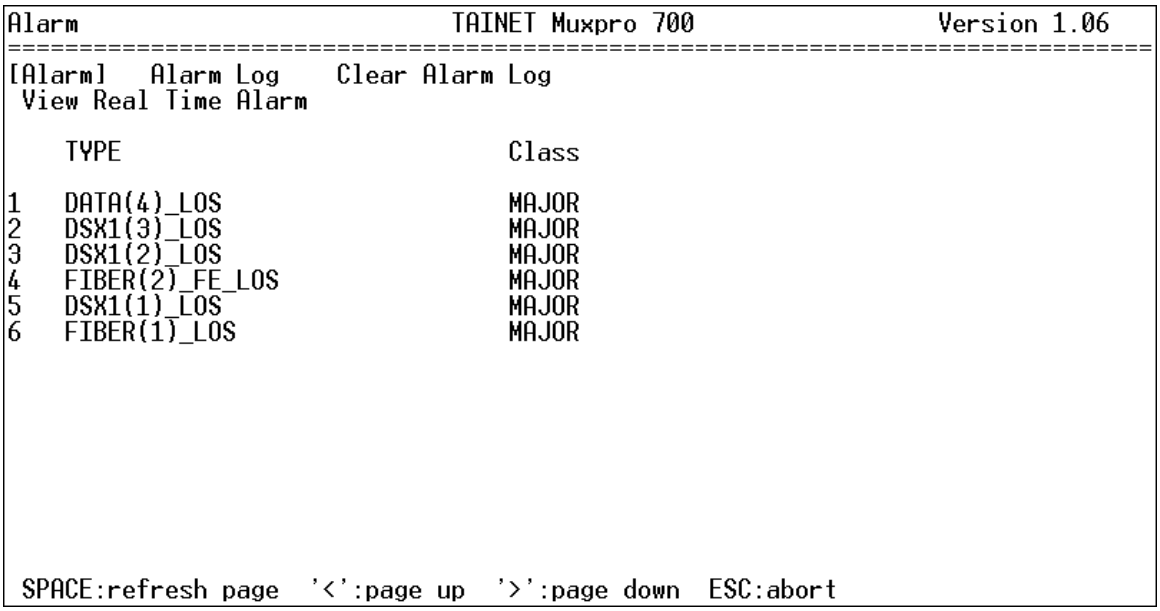
5.3 Monitor


Alarm TAINET Muxpro 700 Version 1.06
[Alarm] Alarm Log Clear Alarm Log
View Real Time Alarm
View Real Time Alarm
Select by [All]
Press: SPACE to select
TAB,ENTER:next field '<':left '>':right ESC:abort

5.3.1 Monitor-Alarm


Monitor TAINET Muxpro 700 Version 1.06
[Alarm] Modem
Alarm Alarm Log Clear Alarm Log
ENTER:select TAB:next '<':left '>':right ESC:previous menu

- Select by: User can view real time alarm by selected port or all. Possible values are All, Port1, Port2, Port3, Port4, FIBER OE1 and FIBER OE2.



- Alarm Type: All TCA (Threshold Crossing Alert) are classified as WARNING. Table 5-1 and Table 5-2 show respectively all FIBER alarms and T1/E1 alarms. The “(4)” in alarm means port number 4.
- Alarm Class: Major, Minor, Warning or Clear.

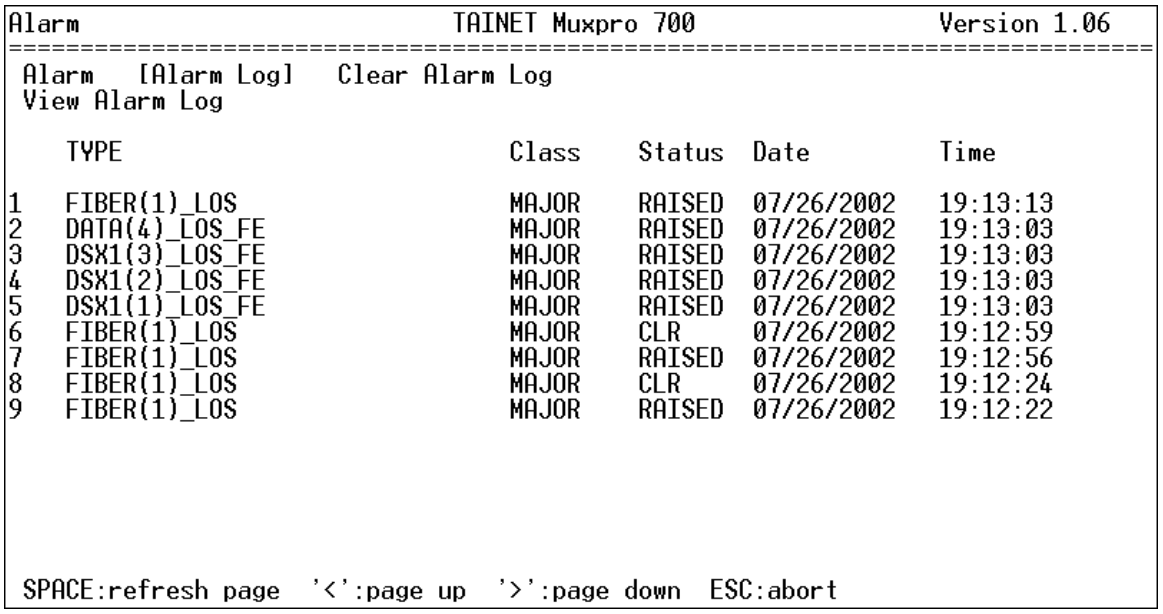
Table 5-1 FIBER Alarms Description

Alarm Type	*Severity Class*	*Description*
FIBER_LOSW	MAJOR	Failure of LOSW
FIBER_LOSWS_QTR_TRHD	WARNING	15-minute LOSW TCA
FIBER_LOSWS_DAY_TRHD	WARNING	1-day LOSW TCA
FIBER_ES_QTR_TRHD	WARNING	15-minute ES TCA
FIBER_ES_DAY_TRHD	WARNING	1-day ES TCA
FIBER_SES_QTR_TRHD	WARNING	15-minute SES TCA
FIBER_SES_DAY_TRHD	WARNING	1-day SES TCA
FIBER_UAS_QTR_TRHD	WARNING	15-minute UAS TCA
FIBER_UAS_DAY_TRHD	WARNING	1-day UAS TCA
FIBER_LOSWS_FE_QTR_TRHD	WARNING	15-minute FE LOSW TCA
FIBER_LOSWS_FE_DAY_TRHD	WARNING	1-day FE LOSW TCA
FIBER_ES_FE_QTR_TRHD	WARNING	15-minute FE ES TCA
FIBER_ES_FE_DAY_TRHD	WARNING	1-day FE ES TCA

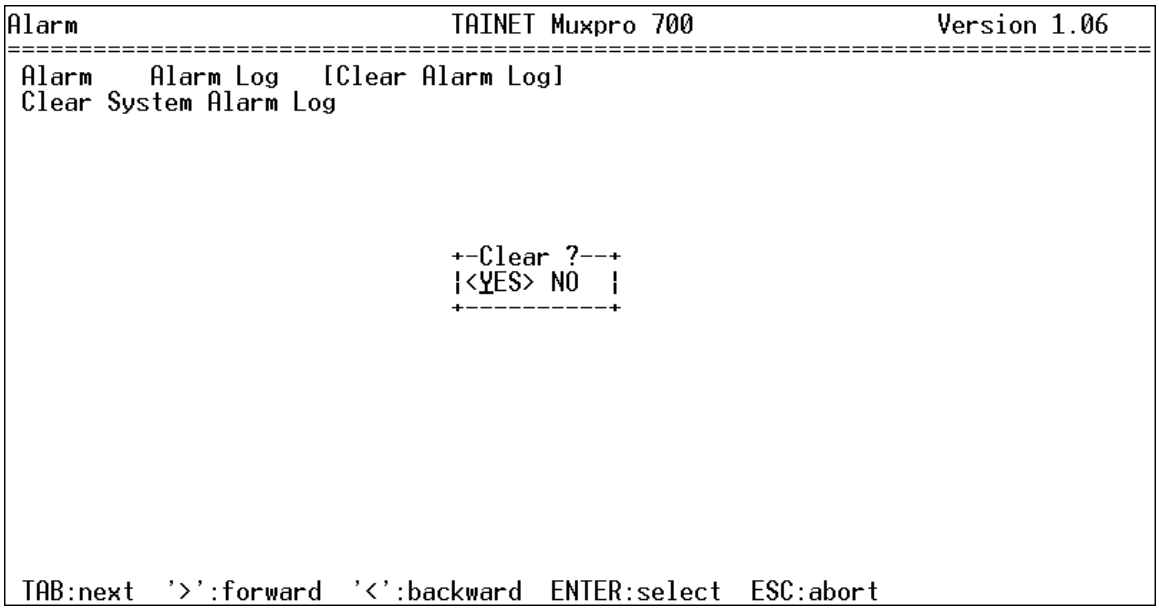
FIBER_SES_FE_QTR_TRHD	WARNING	15-minute FE SES TCA
FIBER_SES_FE_DAY_TRHD	WARNING	1-day FE SES TCA
FIBER_UAS_FE_QTR_TRHD	WARNING	15-minute FE UAS TCA
FIBER_UAS_FE_DAY_TRHD	WARNING	1-day FE UAS TCA
FIBER_ATN_TRHD	WARNING	Attenuation TCA
FIBER_FE_ATN_TRHD	WARNING	FE Attenuation TCA
FIBER_SNM_TRHD	WARNING	SNR Margin TCA
FIBER_FE_SNM_TRHD	WARNING	FE SNR Margin TCA

Table 5-2 T1/E1 Alarms Description

Alarm Type	*Severity Class*	*Description*
DSX1_LOS	MAJOR	Failure of LOS
DSX1_LOF	MAJOR	Failure of LOF
DSX1_AIS	MAJOR	Failure of AIS
DSX1_RAI	MINOR	Failure of RAI
DSX1_LOS_FE	MAJOR	Failure of FE LOS
DSX1_LOF_FE	MAJOR	Failure of FE LOF
DSX1_AIS_FE	MAJOR	Failure of FE AIS
DSX1_RAI_FE	MINOR	Failure of FE RAI
DSX1_ES_QTR_TRHD	WARNING	15-minute ES TCA
DSX1_ES_DAY_TRHD	WARNING	1-day ES TCA
DSX1_SES_QTR_TRHD	WARNING	15-minute SES TCA
DSX1_SES_DAY_TRHD	WARNING	1-day SES TCA
DSX1_UAS_QTR_TRHD	WARNING	15-minute UAS TCA
DSX1_UAS_DAY_TRHD	WARNING	1-day UAS TCA
DSX1_ES_FE_QTR_TRHD	WARNING	15-minute FE ES TCA
DSX1_ES_FE_DAY_TRHD	WARNING	1-day FE ES TCA
DSX1_SES_FE_QTR_TRHD	WARNING	15-minute FE SES TCA
DSX1_SES_FE_DAY_TRHD	WARNING	1-day FE SES TCA
DSX1_UAS_FE_QTR_TRHD	WARNING	15-minute FE UAS TCA
DSX1_UAS_FE_DAY_TRHD	WARNING	1-day FE UAS TCA


Alarm TAINET Muxpro 700 Version 1.06
Alarm [Alarm Log] Clear Alarm Log
View Alarm Log
TYPE Class Status Date Time
1 FIBER(1)_LOS MAJOR RAISED 07/26/2002 19:13:13
2 DATA(4)_LOS_FE MAJOR RAISED 07/26/2002 19:13:03
3 DSX1(3)_LOS_FE MAJOR RAISED 07/26/2002 19:13:03
4 DSX1(2)_LOS_FE MAJOR RAISED 07/26/2002 19:13:03
5 DSX1(1)_LOS_FE MAJOR RAISED 07/26/2002 19:13:03
6 FIBER(1)_LOS MAJOR CLR 07/26/2002 19:12:59
7 FIBER(1)_LOS MAJOR RAISED 07/26/2002 19:12:56
8 FIBER(1)_LOS MAJOR CLR 07/26/2002 19:12:24
9 FIBER(1)_LOS MAJOR RAISED 07/26/2002 19:12:22
SPACE:refresh page '<':page up '>':page down ESC:abort

- Alarm Log: Up to 200 alarm records can be stored without the use UNMS. More alarm can be logged in Database if UNMS is used.



- Clear Alarm Log: Users can clear the alarm logs if it is necessary.

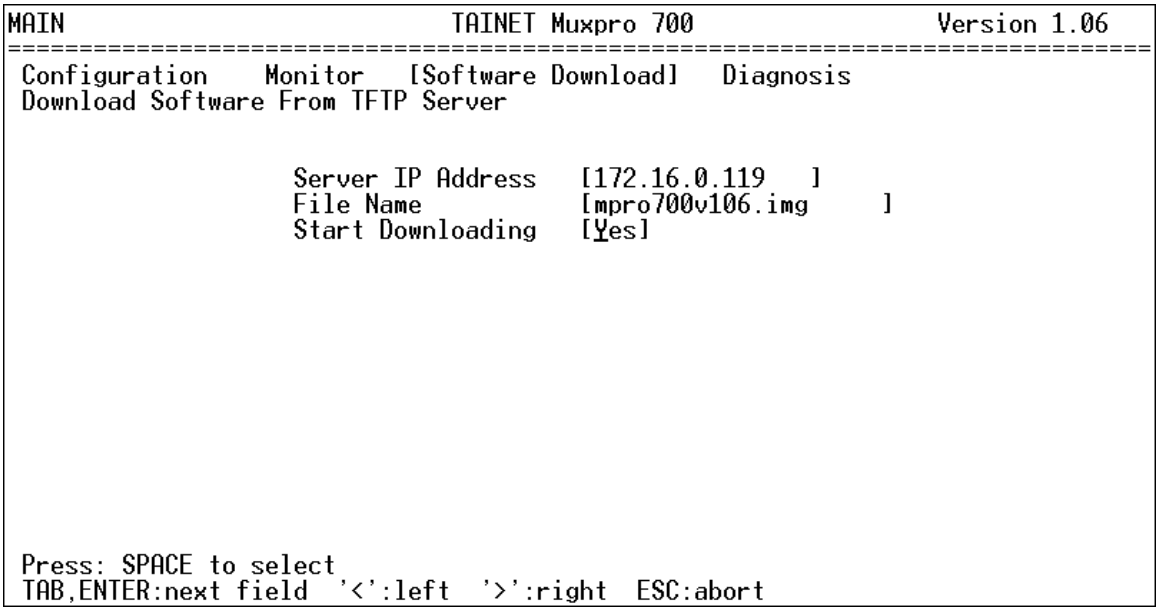
5.3.2 Monitor-Modem

```
Modem                              TAINET Muxpro 700                    Version 1.06
================================================================================
[Version Info]   Modem Status    LED Status
 Version Information



                    Main Hardware Version    1.00
                    Software Version         1.06
                    FPGA Version             1.00









 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

```
Modem                              TAINET Muxpro 700                    Version 1.06
================================================================================
 Version Info   [Modem Status]   LED Status
 Modem Status



                    PortNO                   PORT1
                    Near End Modem Type      FIBER-DATA-E1
                    Far  End Modem Type      FIBER-DATA-E1
                    Near End Port Rate       2048
                    Trunk Timing Source      Through Mode









 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

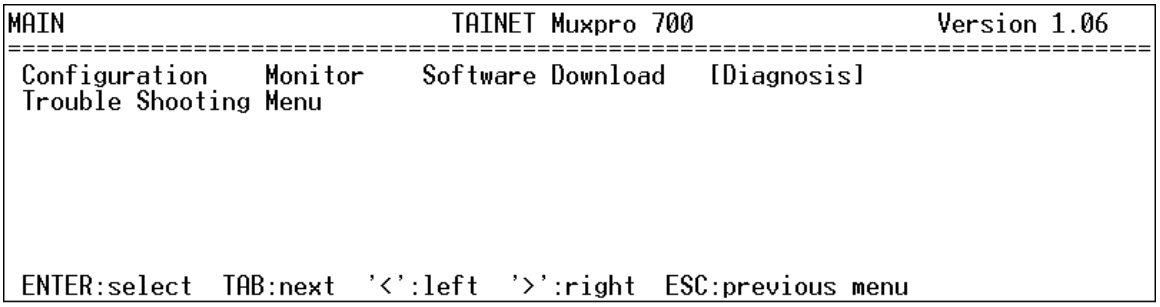
```
Modem                              TAINET Muxpro 700                    Version 1.06h
================================================================================
 Version Info    Modem Status   [LED Status]
 LED Status
                    PortNO               PORT1
                    LED Status: OE1      Active
                    LED Status: OE2      Inactive
                    LED Status: E1T1     RED
                    LED Status: DATA     Inactive




 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

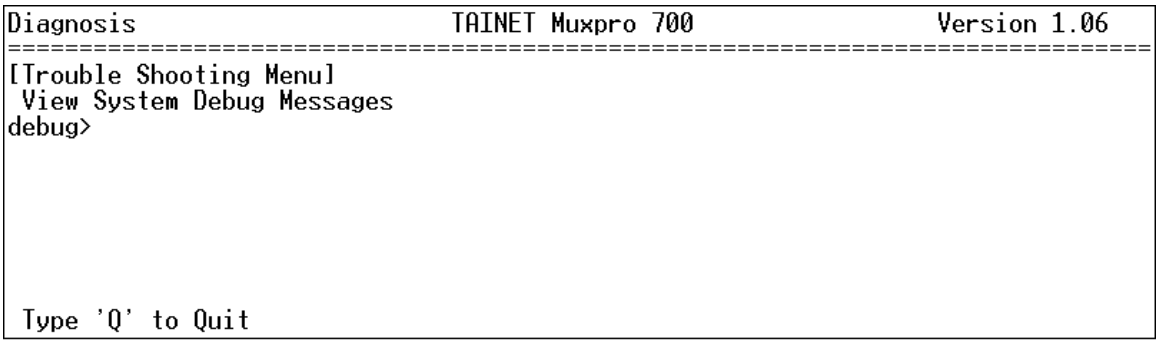
5.4 Software Download


MAIN TAINET Muxpro 700 Version 1.06
Configuration Monitor [Software Download] Diagnosis
Download Software From TFTP Server
Server IP Address [172.16.0.119]
File Name [mpro700v106.img]
Start Downloading [Yes]
Press: SPACE to select
TAB,ENTER:next field '<':left '>':right ESC:abort

- Software Download: MUXpro 700 supports TFTP software upgrade. Users can specify the IP address of TFTP server and file name for downloading through the management port in the front panel by cross cable.

5.5 Diagnosis


MAIN TAINET Muxpro 700 Version 1.06
Configuration Monitor Software Download [Diagnosis]
Trouble Shooting Menu
ENTER:select TAB:next '<':left '>':right ESC:previous menu



- Diagnosis: This is a maintenance mode for expert engineer to do troubleshooting. User may ignore it if user is not so familiar with it.

Appendix A Ordering Information

Table A-1 is the order information for your reference.

Table A-1 Order Information

Ordering No.	Part Number	Description
000-101-0063	MUXpro 700AC-3E1/DATA/B/?	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, 1310nm for up to 40km distance, FC/PC connector, with built-in 100~240VAC auto range power(dual OE module)
000-101-0064	MUXpro 700AC-4E1/B/?	Standalone fiber optic modem w/ 4 E1 balanced interface and 4-ports 10/100M Ethernet interface, 1310nm for up to 40km distance, FC/PC connector, with built-in 100~240VAC auto range power(dual OE module)
000-101-0065	MUXpro 700AC-3E1/DATA/U/?	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, 1310nm for up to 40km distance, FC/PC connector, with built-in 100~240VAC auto range power(dual OE module)
000-101-0066	MUXpro 700AC-4E1/U/?	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, 1310nm for up to 40km distance, FC/PC connector, with built-in 100~240VAC auto range power(dual OE module)
000-101-0067	MUXpro 700DC-3E1/DATA/B	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, 1310nm for up to 40km distance, FC/PC connector, with built-in 36~72VDC power(dual OE module)
000-101-0068	MUXpro 700DC-4E1/B	Standalone fiber optic modem w/ 4 E1 balanced interface and 4-ports 10/100M Ethernet interface, 1310nm for up to 40km distance, FC/PC connector, with built-in 36~72VDC power(dual OE module)
000-101-0069	MUXpro 700DC-3E1/DATA/U	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, 1310nm for up to 40km distance, FC/PC connector, with built-in 36~72VDC power(dual OE module)
000-101-0070	MUXpro 700DC-4E1/U	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, 1310nm for up to 40km distance, FC/PC connector, with built-in 36~72VDC power(dual OE module)

Ordering No.	Part Number	Description
000-101-0074	MUXpro700AC-3 E1/DATA/B/W2A/ ?	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0075	MUXpro700AC-3 E1/DATA/B/W2B/ ?	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 100~240VAC auto rang power(single OE module)
000-101-0076	MUXpro700AC-4 E1/B/W2A/?	Standalone fiber optic modem w/ 4 E1 balanced interface and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0077	MUXpro700AC-4 E1/B/W2B/?	Standalone fiber optic modem w/ 4 E1 balanced interface and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0078	MUXpro700DC-3 E1/DATA/B/W2A	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0079	MUXpro700DC-3 E1/DATA/B/W2B	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0080	MUXpro700DC-4 E1/B/W2A	Standalone fiber optic modem w/ 4 E1 balanced interface and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0081	MUXpro700DC-4 E1/B/W2B	Standalone fiber optic modem w/ 4 E1 balanced interface and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0087	MUXpro700AC-3	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA

Ordering No.	Part Number	Description
	E1/DATA/U/W2A/?	(V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0088	MUXpro700AC-3 E1/DATA/U/W2B/?	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 100~240VAC auto rang power(single OE module)
000-101-0089	MUXpro700AC-4 E1/U/W2A/?	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0090	MUXpro700AC-4 E1/U/W2B/?	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0091	MUXpro700DC-3 E1/DATA/U/W2A	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0092	MUXpro700DC-3 E1/DATA/U/W2B	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0093	MUXpro700DC-4 E1/U/W2A	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0094	MUXpro700DC-4 E1/U/W2B	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 20Km , SC/PC connector, with built-in 36~72VDC power(single OE module)

Ordering No.	Part Number	Description
000-101-0095	MUXpro700AC-3 E1/DATA/U/W4A/ ?	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0096	MUXpro700AC-3 E1/DATA/U/W4B/ ?	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 100~240VAC auto rang power(single OE module)
000-101-0097	MUXpro700AC-4 E1/U/W4A/?	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0098	MUXpro700AC-4 E1/U/W4B/?	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0099	MUXpro700DC-3 E1/DATA/U/W4A	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0100	MUXpro700DC-3 E1/DATA/U/W4B	Standalone fiber optic modem w/ 3 E1 unbalanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0101	MUXpro700DC-4 E1/U/W4A	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0102	MUXpro700DC-4 E1/U/WB	Standalone fiber optic modem w/ 4 E1 unbalanced interface and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 36~72VDC power(single OE module)

Ordering No.	Part Number	Description
000-101-0112	MUXpro700AC-4 E1/B/W4A	Standalone fiber optic modem w/ 4 E1 balanced interface and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0113	MUXpro700AC-4 E1/B/W4B	Standalone fiber optic modem w/ 4 E1 balanced interface and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0114	MUXpro700AC-3 E1/DATA/B/W4A/ ?	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 100~240VAC auto range power(single OE module)
000-101-0115	MUXpro700AC-3 E1/DATA/B/W4B/ ?	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 100~240VAC auto rang power(single OE module)
000-101-0116	MUXpro700DC-3 E1/DATA/B/W4A	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1550nm Rx=1310nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
000-101-0117	MUXpro700DC-3 E1/DATA/B/W4B	Standalone fiber optic modem w/ 3 E1 balanced interface, one DATA (V.35/V.36/RS-530/X.21), and 4-ports 10/100M Ethernet interface, Tx=1310nm Rx=1550nm Single-Mode Laser optical source, reach up to 40Km , SC/PC connector, with built-in 36~72VDC power(single OE module)
	/?	Specify power cord
330-010-0001	/A	North American power cord, 3-pin, 10A/125V, 6 feet
330-010-0002	/E	European power cord, 3-pin (round pin), 10A/250V, 1.83M
330-010-0003	/B	British power cord, 3-pin, 10A/250V, 13A fuse
330-010-0006	/I	India power cord, 3-pin, 6A/250V, 1.83M
330-010-0007	/C	China power cord, 3-pin, 10A/250V, 1.83M

Appendix B Menu Tree

The menu tree of CID interface shows in Table B-1. The default value of each parameter is also listed for user to refer.

Table B-1 VT-100 Menu Tree

Tier 1 / Tier 2	*Tier 3*	*Tier 4*	*Tier 5*	*Tier 6*	*Tier 7*	*Default Value*
Configuration/System	IP	(IP Address)				192.168.1.1
		(net Mask)				255.255.255.0
		(defult GW)				192.168.1.254
	Trap Ip	TrapIpaddress				0.0.0.0
		TrapIpStatus				Inactive
	Date Time	(Date Time)				2002/07/26 20:00:00
	Default					X
Configuration/Interface	FIBER	Near End	(OE Option)			Hardware Auto Selection
			(OE Loop)			OE1
			(DATA Port Location)			Empty
		Far End	(OE Option)			Hardware Auto Selection
			(OE Loop)			OE1
			(DATA Port Location)			Port1
	T1	parameter	Near End (Port 1,2,3,4)	(Frame Mode)		Unframed
				(Line Coding)		B8ZS
				(Idle Patten)		0xff
				(Cable Length)		533~655
			Far End(Port 1,2,3,4)	(Frame Mode)		Unframed
				(Line Coding)		B8ZS

Tier 1 / Tier 2	*Tier 3*	*Tier 4*	*Tier 5*	*Tier 6*	*Tier 7*	*Default Value*
				(Idle Patten)		0xff
				(Cable Length)		533~655
	E1	parameter	Near End (Port 1,2,3,4)	(Frame Mode)		Unframed
				(Impedance)		Balance
				(Idle Pattern)	<0xff,0x7f>	0xff
			Far End(port 1,2,3,4)	(Frame Mode)		Unframed
				(Impedance)		Balance
				(Idle Pattern)	<0xff,0x7f>	0xff
	DATA	Parameters	Near End(port 4)	(DTE Type)		V35
				(Tx data inversion)		Normal
				(Rx sample edge)		Falling
				(Rx data inversion)		Normal
				(E1 Header CRC)		Disable
				(exc-pin detect)		Enable
				(Timing Source)		Internal
			Far End(Port 4)	(DTE Type)		V35
				(Tx data inversion)		Normal
				(Rx sample edge)		Falling
				(Rx data inversion)		Normal
				(E1 Header CRC)		Disable
				(exc-pin detect)		Enable
				(Timing Source)		Internal
Configuration/Modem	Parameters	Configure Modem Type of Near End				FIBER-E1-4P

Tier 1 / Tier 2	*Tier 3*	*Tier 4*	*Tier 5*	*Tier 6*	*Tier 7*	*Default Value*
		Configure Modem Type of Far End				FIBER-E1-4P
		Modem Data Rate:E1(32)T1(24)Data(1~32)*64 kbps				32
	Test	Loopback	Loopback Test(Port 1,2,3,4)			Normal Local Loopback Remote Loopback Local PayLoad Loopback Remote PayLoad Loopback Be Remote Loopback Be Remote PayLoad Loopback
Configuration/Security	Login Username					tainet
	Login Password					tainet
Monitor /Alarm	Alarm	View Real Time Alarm Select by				All
	AlarmLog					
	Clean Alarm Log					X
Monitor /Modem	Version Info	(Main Hw Version)				1.00
		(SW Version)				1.06
		(FPGA Version)				1.00
	Modem Status (port1, 2, 3, 4)	(Near End modem Type)				FIBER-E1-4P
		(Far End Modem Type)				FIBER-E1-4P

Tier 1 / Tier 2	*Tier 3*	*Tier 4*	*Tier 5*	*Tier 6*	*Tier 7*	*Default Value*
		(Near End Port Rate)				2048
		(Trunk Timing Source)				Through Mode
	Led Status(port 1,2,3,4)	(OE1)				
		(OE2)				
		(E1T1)				
		(DATA)				
Software Download /(Sever IP address)						0.0.0.0
Software Download /(File name)						
Software Download /(Start downloading)						No
Diagnosis/Trouble Shooting Menu						

Appendix C Pins Assignment

The pin assignment for different interface of MUXpro 700 is depicted in the following sections.

A Conversion Cable is enclosed for converting DB-25 to V.35, V.36, or X.21 interface, as shown in Figure C-1.

There are three types of Conversion Cables, depending on the customer's order; the cable is enclosed in the shipping package.

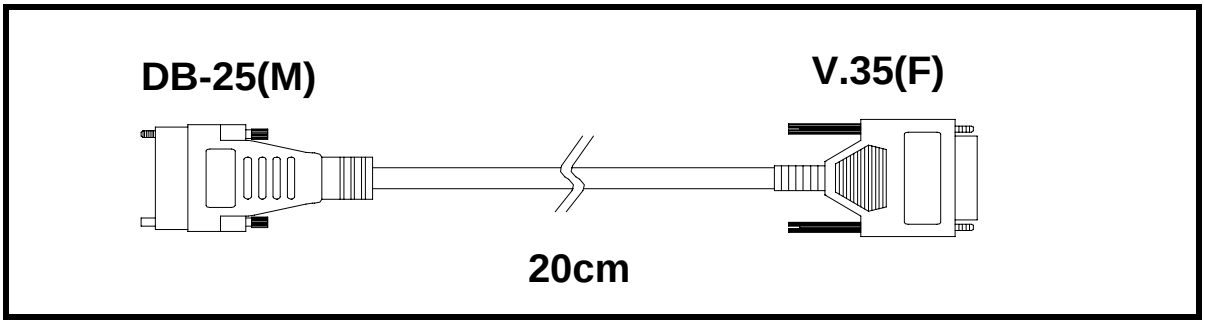


Figure C-1 The Conversion Cable of DB-25(M) to V.35(F)

C.1 V.35 Interface

Figure C-2 and Figure C-3 respectively illustrate the DB-25M and V.35 interfaces. Refer to Table C-1 to see the pin definition of V.35 cable.

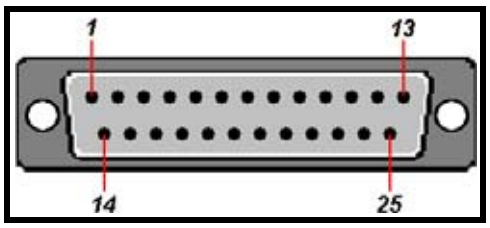


Figure C-2 DB-25M Interface

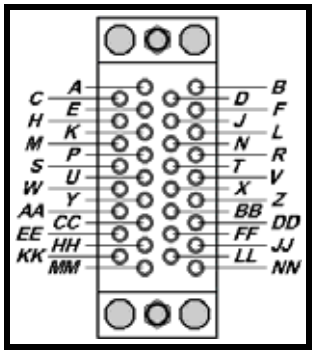


Figure C-3 V.35 Interface

Table C-1 V.35 Cable Pin Definition

DB-25 Male	*Signal*	*V.35 Female*	*Source*
1	Frame Ground	A	Common
7	Signal Ground	B	Common
4	Request to Send	C	DTE
5	Clear to Send	D	DCE
6	Data Set Ready	E	DCE
8	Data Carrier Detect	F	DCE
20	Data Terminal Ready	H	DTE
2	Transmit Data (A)	P	DTE
3	Receive Data (A)	R	DCE
14	Transmit Data (B)	S	DTE
16	Receive Data (B)	T	DCE
24	Terminal Timing (A)	U	DTE
17	Receive Timing (A)	V	DCE
11	Terminal Timing (B)	W	DTE
9	Receive Timing (B)	X	DCE
15	Terminal Timing (A)	Y	DCE
12	Terminal Timing (B)	AA	DCE

C.2 RS-530 Interface

Figure C-4 illustrates the RS-530 Interface.

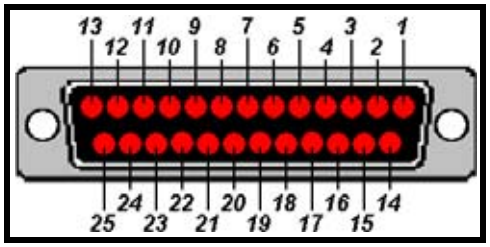


Figure C-4 RS-530 Interface

Refer to Table C-2 to see the pin definition of RS-530 Connector.

Table C-2 RS-530 Connector Pin Definition

DB-25 Male	*Signal*	*Source*
1	Frame Ground	Common
2	Transmit Data (A)	DTE
3	Receive Data (A)	DCE
4	Request to Send (A)	DTE
5	Clear to Send (A)	DCE
6	DCE Ready (A)	DCE
7	Signal Ground	Common
8	Receive line Signal Detector (A)	DCE
9	Receive Signal Element Timing (B)	DCE
10	Receive line Signal Detector (B)	DCE
11	EXT. Transmit Signal Element Timing (B)	DTE
12	Transmit Signal Element Timing (B)	DCE
13	Clear to Send (B)	DCE
14	Transmit Data (B)	DTE
15	Transmit Signal Element Timing (A)	DCE
16	Receive Data (B)	DCE
17	Receive Signal Element Timing (A)	DCE
18		
19	Request to Send (B)	DTE
20	DTE Ready (A)	DTE

21		
22	DCE Ready (B)	DCE
23	DTE Ready (B)	DTE
24	EXT. Transmit Signal Element Timing (A)	DTE

C.3 V.36/RS-449 Interface

The DB-37F interface is shown in Figure C-5.

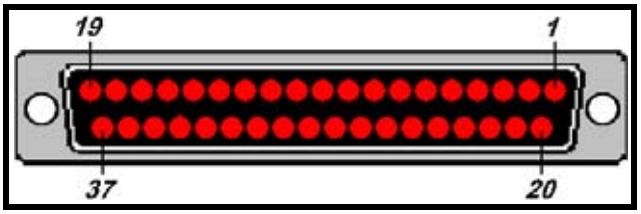


Figure C-5 DB-37F Interface

Refer to Table C-3 to see the pin definition of V.36/RS-449 cable.

Table C-3 V.36/RS-449 Cable Pin Definition

DB-25 Male	*Signal*	*V.36/RS-449 Female*	*Source*
1	Shield	**1**	Common
2	Send Data (A)	**4**	DTE
15	Send Timing (A)	**5**	DCE
3	Receive Data (A)	**6**	DCE
4	Request to Send (A)	**7**	DTE
17	Receive Timing (A)	**8**	DCE
5	Clear to Send (A)	**9**	DCE
6	Data Mode (A)	**11**	DCE
20	Terminal ready (A)	**12**	DTE
8	Receive Ready (A)	**13**	DCE
24	Terminal Timing (A)	**17**	DTE
7	Signal Ground	**19,20,37**	Common
14	Send Data (B)	**22**	DTE
12	Send Timing (B)	**23**	DCE
16	Receive Data (B)	**24**	DCE
19	Request to Send (B)	**25**	DTE
9	Receive Timing (B)	**26**	DCE
13	Clear to Send (B)	**27**	DCE
22	Data Mode (B)	**29**	DCE
23	Terminal Ready (B)	**30**	DTE
10	Receive Ready (B)	**31**	DCE
11	Terminal Timing (B)	**35**	DTE

C.4 X.21 Interface

Figure C-6 illustrates the X.21 Interface. For the DB-25 interface, refer to Figure C-2.

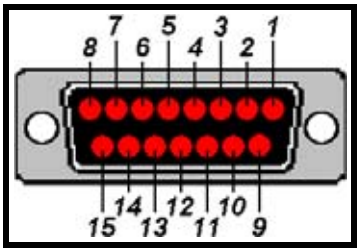


Figure C-6 X.21 Interface

Refer to Table C-4 to see the pin definition of V.36/RS-449 cable.

Table C-4 X.21 Cable Pin Definition

DB25 Male	*Signal*	*X.21 Female*
1	Shield Ground	**1**
2	ıl Ground	**2**
4	TXD(a)	**3**
3	.(a)	**4**
8	RXD(a)	**5**
17	ıtion	**6**
24	RXC(a)	**7**
7	ıl Ground	**8**
14	TXD(b)	**9**
19	.(b)	**10**
16	RXD(b)	**11**
10	ıtion	**12**
9	RXC(b)	**13**
11	b)	**14**
G		**G**

C.5 DB-9 Interface

The DB-9 connector interface is shown as Figure C-7.

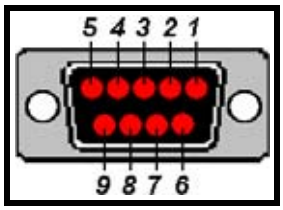


Figure C-7 DB-9 Interface

For the pin definition of DB-9 interface, see Table C-5.

Table C-5 DB-9 Connector Pin Definition

DB9 Female	*Signal*	*Source*
2	TXD	DCE
3		DTE
5	Signal Ground	
7		DTE
8	RTS	DCE

C.6 RJ-45 Interface

Figure C-8 illustrates the RJ-45 interface.

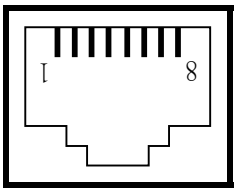


Figure C-8 RJ-45 Interface

Refer to Table C-6 to see the pin definition of LAN RJ-45 connector.

Table C-6 LAN RJ-45 Connector Pin Definition

RJ-45	*10Base-T Signal*
1	TxD Twist Pair +
2	TxD Twist Pair -
3	RxD Twist Pair +
6	RxD Twist Pair -

Appendix D Trouble shooting

<table>
<tr><th colspan="3">Trouble Shooting Table</th></tr>
<tr><td>1</td><td colspan="2">Console / Telnet / Web User Name and Password</td></tr>
<tr><td></td><td colspan="2">When accessing the device through Telnet or the Web, the user will be prompted to enter the password. User can try the default user name “tainet” and password “tainet” to login.</td></tr>
<tr><td>2</td><td colspan="2">Access denied</td></tr>
<tr><td></td><td colspan="2">There are several conditions that will block user to access the device via Console, Telnet or the Web.</td></tr>
<tr><td></td><td>Message</td><td>Solution</td></tr>
<tr><td></td><td>Login Incorrect</td><td>The password entered is incorrect. Check the user name and password again.</td></tr>
</table>

Appendix E Trouble Report

Company	
Local Representation	
Purchase Order No	
Equipment Serial No	
Software Version	

Please describe: **1. Testing Network Structure** **2. Configuration**
3. Testing Network Equipment **4. Trouble Description**

E-MAIL:	
TEL:	**FAX:**
Signature:	**Date: / /**

TAINET COMMUNICATION SYSTEM CORP. **FAX: 886-2-2658-3232**

E-MAIL: *sales@tainet.net*

Appendix F Glossary

KEYWORD	EXPLAINATION
10 Base-T	Part of the original IEEE 802.3 standard, 10 Base-T is the Ethernet specification of 10Mbps base-band that uses two pair of twisted-pair, Category 3,4 or 5 cabling- using one pair to send data and the other to receive. 10 Base-T has a distant limit of about 100 meters per segment.
100 Base-T	Based on the IEEE 802.3u standard, 100BaseT is the Fast Ethernet specification of 100Mbps base-band that uses UTP wiring. 100BaseT sends link pulse over the network when no traffic is present.
Address Mask	The address mask for an IP address is used to identify the boundary between the network portion of the address and host portion.
ADSL	Asymmetric Digital Subscriber Line: An evolving high-speed transmission technology originally developed by Bell-core and mow standardized by ANSI as T1.413. A、 Uses existing UTP copper wires from Telephone Company's central office to subscriber's premises. B、 Involves electronic equipment in the form of ADSL modems at central office and subscriber's premises. C、 Sends digital signal up and down these copper wires and sends more information one way than the other- hence the term "asymmetric".
ARP	Address Resolution Protocol is a method to find a host's physical address from its IP address. An ARP request is sent to the network, naming the IP address, then machine with that IP address returns its physical address so it can receive the transmission.
ATM	Asynchronous Transfer Mode. International standard for cell relay in which multiple service types (such as voice, video, or data) are conveyed in fixed-length (53-byte) cells. Fixed-length cells allow cell processing to occur in hardware, thereby reducing transit delays. ATM is designed to take advantage of high-speed transmission media such as E3, SONET, and T3.
Authentication	Proof that the information came from the user or location that repeatedly sent it. One example of authenticating software is through digital signature.
Bandwidth	This is the capacity on a link usually measured in bits-per-second (bps).
Bridging	Bridging provides LAN-to-LAN frame forwarding services between two or more LANs. Frames from one LAN are forwarded across a bridge to a connected LAN. Bridging works is similar to the way repeaters work except that bridges forward frame based on

KEYWORD	EXPLAINATION
	their MAC address.
CBR	Constant Bit Rate: An ATM Forum Q-o-S class created for use in ATM network. CBR is used for communications on precision clocking to guarantee trustworthy delivery.
CHAP	Challenge Handshake Authentication Protocol is an alternative protocol that avoids sending password over the wire by using a challenge/response technical.
Class A network	Part of Internet Protocol hierarchical addressing scheme. Class A networks have only 8 bits for defining networks and 24 bits for defining hosts on each network.
Class B network	Part of Internet Protocol hierarchical addressing scheme. Class B networks have only 16 bits for defining networks and 16 bits for defining hosts on each network.
Class C network	Part of Internet Protocol hierarchical addressing scheme. Class C networks have only 24 bits for defining networks and 8 bits for defining hosts on each network.
CLI	Command Line Interface: Allow you to configure TAINET'-s products with maximum flexibility.
CO	Central Office. A CO is a facility that serves local telephone subscribers. In the CO, subscriber's lines are joined to switching equipment that allows them to connect to each other for both local and long distance calls.
CPE	Customer Premise Equipment is privately owned telecommunication equipment at an organization's site that is attached to the telecommunication network. CPE equipment includes routers, modem, PBX, telephones and video communication equipment.
Crossover Ethernet Cable	A cable that wires a pin to its opposite pin, for example RX+ is wired to TX+. This cable connects two similar device, for example, two data terminal equipment (DTE) or data communication equipment (DCE) devices.
DCE	Data Communication Equipment is typically a modem or other type of communication device. The DCE sits between the DET (data terminal equipment) and a transmission circuit such as a phone line.
DHCP	Dynamic Host Configuration Protocol automatically assigns IP address to clients when they log on. DHCP centralizes IP address management on the central computers that run the DHCP server program.
DNS	Domain Name System. A database of domain names and their IP address-e-s. DNS is the primary naming system for many distributed networks, including the internet.
Domain Name	The unique name that identifies an Internet site. Domain Names always have 2 or more parts that are separated by dots. Generally speaking, the part on the left is the most specific and the part on the right is the most general.
DSL	Digital Subscriber Line technologies enhance the data capacity of the existing twisted-pair wire that runs between the local telephone company switching offices and most homes and offices. There are actually seven types of DSL services, ranging in speeds form 16kbits/sec to 52 M bits/sec. The services are either symmetric (traffic flows at the same speed in both directions) or asymmetrical (the downstream capacities higher than the upstream capacities). DSL connections are point-to-point

KEYWORD	EXPLAINATION
	dedicated circuits, which means that they are always connected. There is no dial-up. There is also no switching, which means that the line is a direct connection into the carrier's frame relay, ATM or Internet-connect system.
DSLAM	A Digital Subscriber Line Access Multiple-x-e-r is a network device. Usually at a telephone company central office, that receives signals from multiple customer Digital Subscriber Line connections and puts the signals on the a high-speed backbone line using multiplexing techniques. Depending on the product, DSLAM Multiple-x-e-r connects DSL lines with some combination of asynchronous transfer mode ATM, frame relay or IP networks.
DTE	Originally, Data Terminal Equipment meant Dumb Terminal Equipment. But today it is a computer, bridge or router that interconnects local area network (LAN) in increasingly more intelligent ways.
Dynamic route	Also known as adaptive routing, this technique automatically adapts to traffic or physical network revisions.
Ethernet	A very common method of networking computers in a LAN. There are a number of adaptations to the IEEE 802.3 Ethernet standard, including adaptations with data rates of 10 Mbps and 100 Mbps over coaxial cable, twisted-pair cable and fiber-optical cable.
FTP	File transfer protocol: The TCP/IP protocol used for transmitting files between network nodes, it supports a broad range of file types and is defined in RFC 959.
Gateway	A gateway is a computer system or other device that acts as translator between two systems that do not use the same communication protocols, data formatting structures, languages and/or architecture.
HTTP	Hyper Text Transfer Protocol. The most common protocol used on the Internet HTTP is the primary protocol used for web sites and web browsers. It is also prone to certain kinds of attack.
IGMP	Internet Group Management Protocol: Employed by IP hosts, the protocol that reports their multicast group membership to an adjacent multicast router.
IP	Internet Protocol. The IP (currently IP version 4), is the underlying protocol for routing packets on the Internet and other TCP/IP-based networks.
IP Pool	Internet Protocol Pool refers to the collective group of IP address locates in any particular place.
ISP	Internet Service Provide connections into the Internet for home users and businesses. There are local, regional, national, and global ISPs. You can think of local ISPs as the gatekeepers into Internet.
Jack Type	Different type of jacks (RJ11, RJ45 or RJ 48) can be used for an ISDN line. The RJ11 is the most common in the world and is most often used for analog phones, modems and fax machines. RJ48 and RJ45 are essentially the same, as they both have the same 8-pin configuration. An RJ11 jack can fit into an RJ45 / RJ48 connector, however, an RJ45/RJ48 cannot fit into an RJ11 connector.

KEYWORD	*EXPLAINATION*
LAN	Local Area Network is a shared communication system to which many computers are attached. A LAN, as its mane implies, is limited to a local area. This has to do more with the electrical characteristics of the medium than the fact that many early LANs.
LED	Light Emitting Diode. LED are visual indicators that relay information about the status of specific Scorpio 1401 / 02 functions to user by lighting up, turning off or blinking. LED-slugs are usually found on the front panel of the physical device. Examples include Status, Power and System LEDS.
LLC-Multiplexing	LLC encapsulation allows multiplexing of multiple protocols over a single ATM virtual circuit. By prefixing the PDU (Payload Data Unit) with an IEEE 802.2 Logical Link Control (LLC) header, each protocol can be identified.
Loop-reach	Loop reach defines speed that can be attained at various distances. This is very important for DSL technology as distance from the CO influences attainable speeds.
MAC	On a local area network (LAN) or other network, the Media Access Control (MAC) address is your computer's unique hardware number. (On an Ethernet LAN, it is the mane as your Ethernet address). The MAC layer frames data for transmitted as a stream of bits.
Modem	Modulator-demodulator: A device that converts digital signal to analog and vice-versa so that digital information can be transmitted over analog communication facilities, such as voice-grade telephone lines.
Name Resolution	The allocation of an IP address to a host name. See DNS.
NAT	Network Address Translation is the translation of an Internet Protocol address used within one network to a different IP address known within another network. NAPT extends the notion of translation one step further by also translating transport identifier (e.g., TCP and UDP port numbers, ICMP query identifiers). This allows the transport identifiers of a number of private hosts to be multiplexed into the transport identifiers of a single external address. NAPT allows a set of hosts to share a single external address.
Network	Any time you connect 2 or more computers together so that they can share resources, you have a computer network. Connect 2 or more networks together and you have an internet.
Node	Any single computer connected to a network.
PAP	Password Authentication Protocol (PAP) is a security protocol that requires users to enter password before accessing a security system. The user's name and password are sent over the wire to a server there they are compared with a database of user account names and password. This technical is vulnerable to wiretapping (eavesdropping) because the password can be captured and used by someone to log onto the system.
Port	An Internet port refers to a number that is part of a URL, appearing after a colon (:) right

KEYWORD	*EXPLAINATION*
	after the domain name, Every service on an Internet server listens on a particular port number on that server. Most services have standard port numbers, e.g., Web servers normally listen on port 80.
Port (H/W)	An interface on a computer for connecting peripherals or device to the computer. A printer port, for example, is an interface that is designed to have a printer connected to it. Ports can be defined by specific hardware.
POTS	Plain Old Telephone Service is the analog telephone service that runs over copper twisted-pair wires and is based on the original Bell telephone system. Twisted-pair wires connect homes and businesses to a neighborhood central office. This is called the local loop. The central loop. The central office is connected to other central offices and long-distance facilities.
PPP	Point to point. PPP encapsulates and transmits IP (Internet protocol) data-gram over serial point-to-point links. PPP works with other protocol such as IPX (Internet work Packet Exchange).
RIP	Routing Information Protocol is an interior or intra-domain routing protocol that uses the distance-vector routing algorithms. RIP is used on the Internet and is common in the NetWare environment as a method for exchange routing information between routers.
Router	A device that connects two networks together. Routers monitor, direct and filter information that passes between these networks. Because of their location, routers are a good place to install traffic or mail filter. Routers are also prone to attacks because they contain a great deal of information about a network.
Server	A computer, or a software package, that provides a specific kind of service to client software running on the computers.
SNMP	System Network Management Protocol is a popular management protocol defined by the Internet community for TCP/IP networks. It is a communication protocol for collecting information from device on the network.
Static Routing	Static routers tell the Scorpio routing information that it cannot learn automatically through other means. The need for Static Routing can arise in cases their RIP is disabled on the LAN or a remote network is beyond the one that is directly connected to a remote node.
VC-base multiplexing	Each ATM VC carries PDU-s of exactly one protocol type. When multiple protocols need to be transported, there is a separate VC for each protocol.
WAN	Wide Area Networks link geographically dispersed offices in other cities or around the globe. Just about any long-distance communication medium can serve as a WAN link, including switched and permanent telephone circuits, terrestrial radio systems and satellite system.